

APRIL 1958

MACHINE AND TOOL

blue book

production's big stake in
QUALITY CONTROL

see page 107



Standard Pressed Steel's President Hollowell discussing the metrology phase of their Quality Control with B.B. Editor Meline.

a hitchcock publication



Never Confuse the No. 8 MARVEL with an ordinary Band Saw ...only the MARVEL is Universal



Only on a No. 8 MARVEL can the saw column be instantly indexed and locked at any angle from 45° right to 45° left, and the saw then fed thru the work at the desired angle — without moving the work.



Only a No. 8 MARVEL can do all of these things: Snip-off a 1/4" rod or cut-off on 18" x 18" cross section.



Rough to Size and Shape



Miter



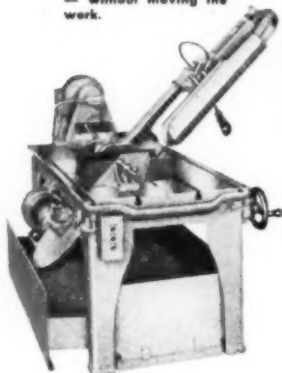
Index



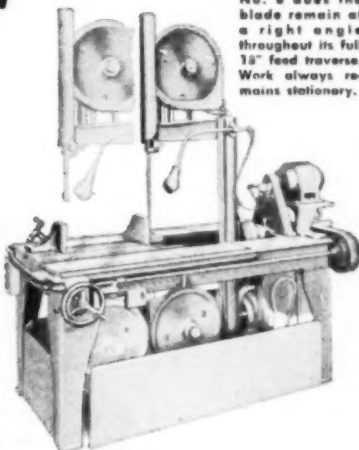
cut off and shape
Structural Beams



Slotting



Only a MARVEL No. 8 does the blade remain at a right angle throughout its full 18" feed traverse. Work always remains stationary.



Only a No. 8 MARVEL has the large T-slotted work table, with removable quick action vise, that permits accurate set-ups of work of unrestricted sizes and shapes, special fixtures; Etc.

"Rough Machine" to size and shape with minimum chip waste

The No. 8 MARVEL is the "busiest tool in the shop" wherever installed because it is a *universal* tool—has both the capacity and the versatility to handle not only standard sawing jobs but innumerable "trick" and convenience jobs as well. More than a metal saw, the No. 8 MARVEL is a fine machine tool with machine tool features like: Both power and hand feeds; Depth Stops; Automatic Blade Tension; Built-in Coolant Pump; Three operating speeds (or six with 2-speed motor). Moisture-proof electrical controls that conform to both "J.I.C." and "MACHINE TOOL" electrical standards; Dirt-proof ball bearings, etc.

If you cut, machine or fabricate metal, this is a sawing machine you should know about. Write for catalog.

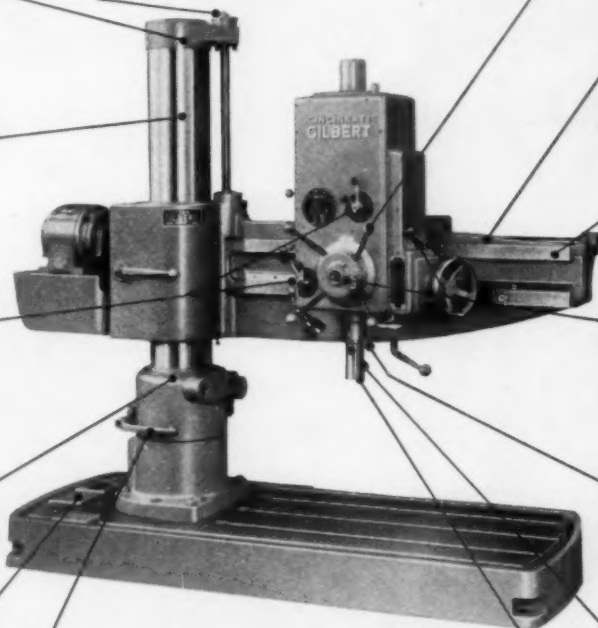


ARMSTRONG-BLUM MFG. CO. • 5700 West Bloomingdale Avenue • Chicago 39, U.S.A.

ONLY GILBERT RADIALS

OFFER ALL THESE FEATURES

When you order a Cincinnati Gilbert radial, you get more new features per dollar than any other radial can offer. And every feature is designed to give you maximum return on your investment—in performance, productivity, and dependability.



Safety
elevating rail
protects both
operator and
machine

Weight
carried on
opposed Timken
bearings

Hardened
column
available

Direct-reading
speed and feed
shifters; gears
counterbalanced for
easy shifting

Adjustable
ball bearing rollers
on hardened ring
for maintained
rigidity

Long base
on heavy base
provides 360°
stability

Powerful,
accurate electric
column clamp
available

Four-way
turntable cuts
machine handling
time

Balanced arm
resists torsion,
compression, tension
forces

Head rides
on anti-friction
bearings; clamps
three surfaces

When disengaging
positive feed clutch,
spindle won't
drop

Feed spindle
support near tool
runout is less
than .001"

Hardened tang
slot is an
exclusive Gilbert
feature

You can always
see the spindle;
get extra use
of spindle travel

And don't overlook these additional features:

- wide range of spindle speeds for efficient tool performance;
- hardened gears throughout the machine;
- standard or special tap leads available;
- modern styling which reduces housekeeping, convinces customers that your shop is up-to-date.

Write or call for Bulletin 349.

those who buy Gilbert buy Gilbert again

THE CINCINNATI GILBERT MACHINE TOOL CO.
3366 BEEKMAN STREET, CINCINNATI 23, OHIO

Use postpaid card. Circle No. 201



Here are three new high-precision **PRODUCTION MACHINES**
to give you

- more production
- more accurate work
- finer finish, and
- lower cost

(Top) WADE 94 Utility Lathe (Middle) WADE 94 Finishing Lathe (Bottom) WADE 94 Electric Clutch Hand Turret Lathe

Ask for literature that describes the many amazing new features.

THE WADE TOOL CO.

51 RIVER STREET, WALTHAM 54, MASS.

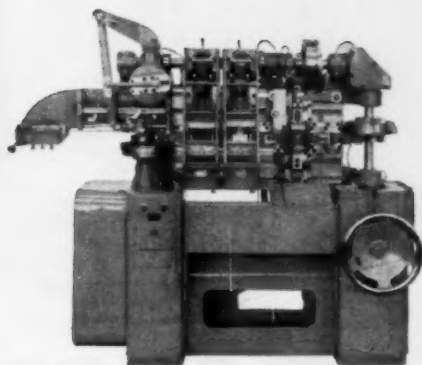
Use postpaid card. Circle No. 202

THE FIRST

ENTIRELY NEW

FOUR-SLIDE IN

FIFTY YEARS!



A development of industry-wide importance is the Torrington Verti-Slide—a new vertical 4-slide that is the first major innovation in the basic field of wire and strip forming equipment in half a century!

The Verti-Slide was designed to meet a serious need for greater versatility, lower tooling cost, faster set-up time and reduced floor space. We urge you to investigate the new Torrington Verti-Slide in detail.

THE TORRINGTON MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT • VAN NUYS, CALIFORNIA • OAKVILLE, ONTARIO

April, 1958

Use postpaid card. Circle No. 203

*Write for
Your
New.....*



ARMSTRONG

GENERAL CATALOG NO. 57

Listing approximately 5,000 quality tools for industry, including:

- ★ Tool Holders (The complete Armstrong System)
- ★ Cutting Tools (Tool Bits, Cut-off Blades, Carbide Cutters and Inserts)
- ★ Lathe and Milling Machine Dogs
- ★ Set-up and Hold-down Tools
- ★ Machine Shop Specialties
- ★ Drop Forged "C" Clamps
- ★ Parallel and Machinists' Clamps
- ★ Drop Forged Eye Bolts and Hoist Hooks
- ★ Drop Forged Machine and Crank Handles
- ★ Drop Forged Wrenches
- ★ Detachable Sockets and Drive Parts
- ★ Bridge Ratchets and Sockets
- ★ Adjustable Wrenches
- ★ Torque Wrenches
- ★ Pipe Tools
- ★ Chain Tongs

**No industry reference file is complete without the new
Armstrong No. 57 Tool Catalog**

ARMSTRONG BROS. TOOL CO.

5208 W. ARMSTRONG AVE. • CHICAGO 30, ILL.



See us at our BOOTH No. 308 ASTE SHOW

Use postpaid card. Circle No. 204

MACHINE and TOOL BLUE BOOK

Reader's Guide

MACHINE AND TOOL
blue book

APRIL, 1958

VOL. 53 - No. 4

AS THE EDITOR SEES IT	91
FEATURES THIS MONTH	92
LETTERS TO THE EDITOR	97
ROUNDUP OF WASHINGTON NEWS	101

Interview

Production Has a Big Stake in Quality Control	107
An interview with H. Thomas Hallowell, Jr., president, Standard Pressed Steel Co.	
By PAUL A. MELINE	

Turning

Cutting Costs on Turning Operations at Allison	114
By CHARLES GLAZIER	

Production

Faster Facing and Boring at Chance Vought	119
---	-----

Drilling

Mechanizing Drill Press Set-ups with Pneumatic Controls	120
By BEN ELDRIDGE and J. L. FISHER, JR.	

Grinding

Controlling Grinding Feeds to Micro-inches	129
--	-----

Arc Welding

Welding Head on 20 ft. Boom Traverses Large Tank Seams	133
By JAMES ANGUS	

Milling

Tape Controlled Milling for the Small Plant	137
---	-----

ASTE Tool Show

Tooling for Competition	175
-------------------------	-----

BPA

Accepted as Controlled Circulation Publication at Pontiac, Illinois
Copyrighted, 1958, by the Hitchcock Publishing Company,
222 E. Willow Avenue Wheaton, Ill.

**SEE
NEXT
PAGE**

Reader's Guide

continued

Field Reports

3-D Profile Milling with Infinitely Variable Speeds	141
New Automatic Scrap Shear Cuts Scrap into Equal Lengths	144
Drilling Atomic Plate	148
Boring Contoured Surface of Engine Adaptor ...	150

Shop Hints

Manipulator for Automatic Arc Welding	153
Chucks for Thin Workpieces	154

Departments

Meetings, Conventions, Exhibits	94
Free Literature	159
News of the Industry	171
What's New in Metalworking at ASTE Tool Show	215
Mechanics Through the Ages	370
Products Index	373
Index to Advertisers	379

Editorial Staff

W. F. SCHLEICHER, vice-president and editorial director; P. A. MELINE, managing editor; DARREL WARD, field editor; D. M. CARLSON, assistant editor; M. L. COMSTOCK, editorial assistant; JOHN S. TODD, production manager; ELINOR LILLY, Reader's Service; H. O. ERICKSON, Research Manager.

Editorial Advisory Board

M. JOHN AHLSTROMER, asst. factory manager, Chicago Screw Co.; RONNIE BURRITT, factory manager, J. J. Tourek Mfg. Co.; JOHN V. CARLSON, gen'l. supt., Union Special Machinery Co.; R. T. CARLSON, supt. NRK Mfg. & Eng. Co.; ED FLUSKEY, Consulting Eng., Revere Camera Co.; HOMER F. GRIFFITH, asst. works mgr., Construction Equipment Div., International Harvester Co.; JOE KOSINSKI, works mgr., Scully-Jones & Co.; PAUL PRIKOS, vice pres., Prikos & Becker Tool Co.

Business Staff

R. C. VAN KAMPEN, president; VINCENT C. HOGREN, executive vice president; J. E. HITCHCOCK, HENRY J. SMITH, DAN E. REARDON, vice-presidents; BRUCE B. HOWAT, production director; M. L. YONTS, secretary and advertising production manager; OLIVER S. PEPPER, business mgr.; LOREN D. JOUETT, Director of Marketing; L. M. SCHROEDER, art director; R. L. SPRECKELS, circulation manager.

Hitchcock District Managers are listed on Page 64.

Subscription rates: \$5.00 per year in U.S.A. \$6.00 per year elsewhere

a new way to Higher
honing Production
at Lower cost

announcing

NEW FULMER HONING MACHINES

still priced far below competitive equipment!

- Greater Productivity
- Money-Saving Versatility
- Important New Compactness
- Traditional Fulmer Quality

TAKE the "ho-hum" out of bore finishing with a new Fulmer Honing Machine specifically designed to speed production and cut costs far below conventional grinding and bore finishing methods.

Now . . . more than ever before . . . new Fulmer Honing Machines are the answer for outstanding accuracy and production . . . at lowest cost! Send print of workpiece for a no-obligation estimate of time and cost savings that will amaze you. Also, get your FREE Fulmer Honing Computer and new Bulletin. Just Write: C. Allen Fulmer Co., Dept. B., 107 E. 4th St., Cincinnati 2, Ohio.



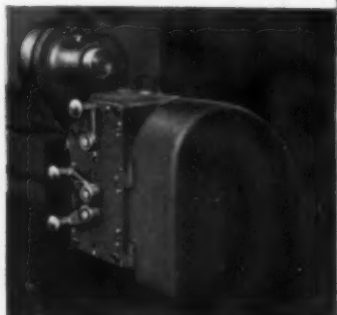
FULMER

Honing Equipment

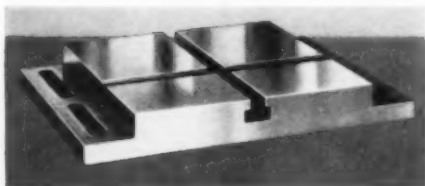
SUPPORTING TEAM for the



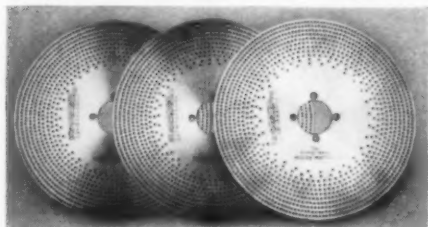
WIDE RANGE DIVIDER. A built-in unit for divisions up to 400,000. Exact angular divisions, too, intervals of six seconds. Publication No. M-1842.



SHORT AND LONG LEAD DRIVING MECHANISM for driving Dividing Heads mounted on Universal Dial Type Millers only. Lead range .010" to 1000", or .025" to 3000". Publication No. M-1887.



RIGHT ANGLE PLATES for offsetting the Dividing Head from the table T-slots, or setting it up to face the machine spindle. Publication No. M-644-1.



HIGH NUMBER INDEXING ATTACHMENT. These plates interchange with standard index plate supplied with CINCINNATI Dividing Heads. Indexes all numbers up to 200 and many beyond. Publication No. M-987.

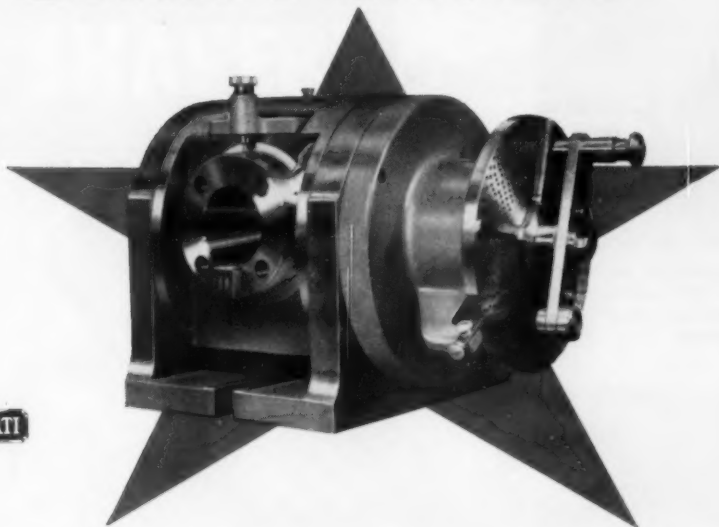


ENCLOSED DRIVING MECHANISM for driving Dividing Heads. Lead range $2\frac{1}{2}$ " to 100". Publication No. M-1755.

CINCINNATI®

MILLING MACHINES • BROACHING MACHINES • CUTTER
METAL FORMING MACHINES • HARDENING MACHINES •

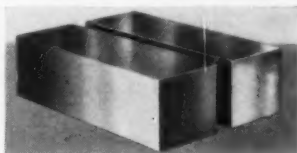
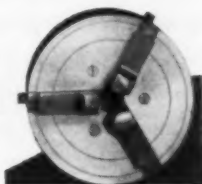
... STAR PLAYER



CINCINNATI

Easily the star performer on milling machines, the CINCINNATI Dividing Head has a strong supporting team of attachments which gives it extra value in any shop. Each attachment lends a hand in milling specific types of dividing head work. Some of them can be employed to advantage in your shop. It's easy to see how; just look at the whole team pictured here. Then write for literature on the ones in which you are interested.

CHUCK. Three jaw universal type. Has threaded flange to facilitate mounting on spindle nose of Dividing Head. 6" and 9" sizes. Publication No. M-1755.



RAISING BLOCKS. Give your Dividing Head the benefit of accurately made Raising Blocks. Supplied in pairs: 2", 2½" and 3" high. Publication No. M-644-1.

AND TOOL GRINDERS • SPECIAL MACHINE TOOLS
CUTTING FLUIDS • GRINDING WHEELS

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO

1



Unlocked position •
In this position tools
are inserted or re-
moved.

2



Locked position •
Handle is moved up-
ward as shown to lock
tools securely. Desired
locking pressure ob-
tained by nose adjust-
ment.

3



Working position •
Tool now securely held
in position—handle
removed.

TREE RAPID-LOK COLLET ADAPTER



EXCLUSIVE TREE FEATURE

The Tree Rapid-Lok is a collet adapter designed to hold end mills, boring bars, and other tooling *accurately, securely* and *with great rapidity* on both horizontal and vertical mills, jig borers, boring bars and other machines.

It is an adaptation of an exclusive feature which has been proved in use on Tree milling machines over a period of years.



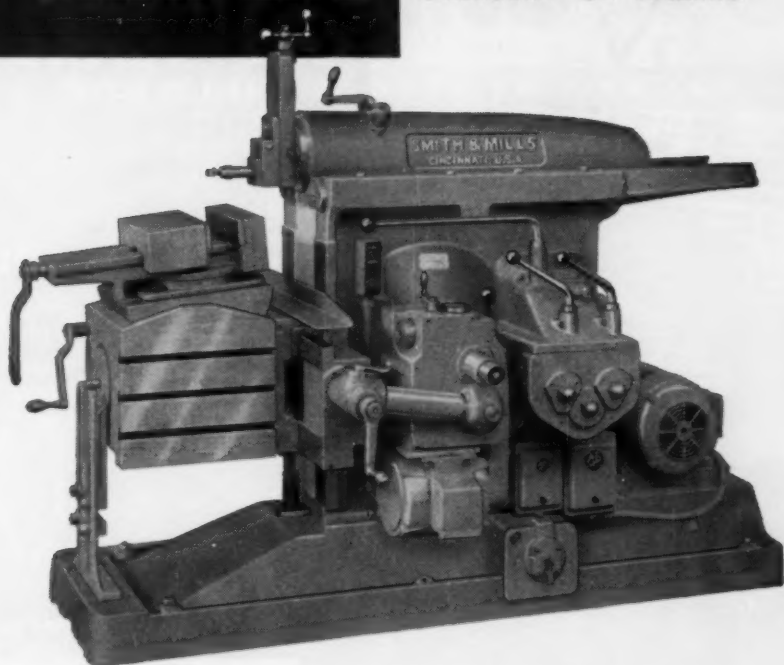
For Full Information Write
TREE TOOL & DIE WORKS
RACINE, WISCONSIN

Use postpaid card. Circle No. 207

MACHINE and TOOL BLUE BOOK

SHAPERS

Smith & Mills



Compare Smith & Mills with any other shaper for versatility, speed, cutting power and precision performance. Compare and you'll buy Smith & Mills—famous for high quality shapers since 1888. Write or wire for prices, deliveries, repair parts or field service. Smith & Mills Shaper Division, Nebel Machine Tool Corp., 3491-B Central Parkway, Cincinnati 25, Ohio.

Smith & Mills Shapers now available in Heavy Duty Models in 16", 20", 25", 28", 32" and 36" strokes, and Standard Duty Models in 20" and 24" strokes.





The Cleveland Automatic Machine Company
4932 Beech Street
Cincinnati 12, Ohio
Attention: Mr. John Prohaska.

Gentlemen:

Our experience with our Cleveland 3" AB Automatic has been most gratifying. Its great versatility and accuracy as a chucker as well as a bar machine, coupled with its ease of set-up, due primarily to the use of universal cams and infinitely variable electronic feeds, and its low cost of maintenance has contributed greatly toward keeping our prices competitive and our quality high.

Because of its ease of set-up, we have used this machine to advantage on short runs of as few as 200 pieces as well as long runs of several thousand pieces.

Needless to say, we are extremely happy with our choice.

Very truly yours,
VEE-ARC CORPORATION

Aram Kalenian
Aram Kalenian,
President.



Aram Kalenian, writer of the letter reproduced above, and president of Vee-Arc Corp., is shown with Ralph Rastad, superintendent, and Paul Daoust, operator, examining a chucking job run on their 3" Model AB Cleveland Dialmatic.

WHAT THE CLEVELAND DIALMATIC DOES FOR VEE-ARC...

IT CAN DO FOR YOU!



BAR JOBS

CHUCKING JOB

The parts shown (some are blanked out, others are machined complete) are typical of those produced on the Model AB 3" Cleveland Single Spindle Automatic at the Vee-Arc Corp. Diameters of these parts range from $\frac{1}{2}$ " to $\frac{1}{4}$ ", and materials include aluminum, type 303 stainless, and tough, cold hobbing steel.

By making use of the Cleveland's chucking attachment, which is quickly substituted for the bar stock feed assembly, the part shown at right is machined from blanks of $\frac{1}{4}$ " round aluminum bar stock in 98 seconds cycle time.

What the Cleveland Dialmatic does for Vee-Arc, it can do for you! Choose Cleverlands to increase the production efficiency in your plant.

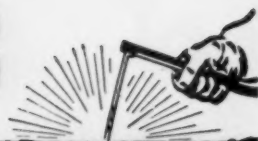
THE CLEVELAND AUTOMATIC MACHINE COMPANY

Manufacturers of a Complete Line of Single Spindle Automatic Screw Machines and High Pressure Hydraulic Die Casting Machines

4934 Beech Street
Cincinnati 12, Ohio

SALES OFFICES: CHICAGO
CLEVELAND • DETROIT
HARTFORD • S. ORANGE

Weldynamics



ARC WELDING AT WORK CUTTING COSTS

WHY WELDORS AND MANAGEMENT LIKE IMPROVED FLEETWELD 47



Improved Fleetweld 47 gives that fast, easy operation . . . yet it isn't limited to the flat position.

Weldors appreciate the smooth flowing action!

Management loves the cost-cutting speed and versatility.

Try Improved Fleetweld 47 on your next flat and uphill production job. You'll love it too! It conforms to AWS E-6013 and E-6014.

Write for the *new* Weldirectory Bulletin 7000.1.

Lincoln men who know Weldynamics will help you establish procedures, select equipment and electrodes for most efficient, low-cost welding.

*The World's Largest Manufacturer
of Arc Welding Equipment*



© 1958 The Lincoln Electric Company

THE LINCOLN ELECTRIC COMPANY, DEPT. 3620, CLEVELAND, OHIO

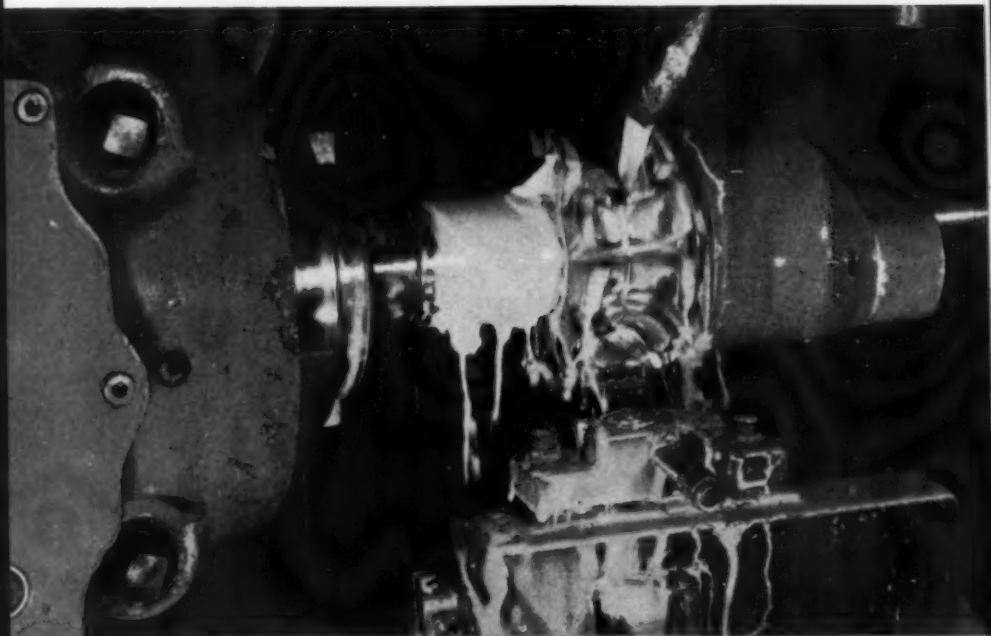
Use postpaid card. Circle No. 210

April, 1958

13



Wheels and machines stay cleaner with emulsions of new S.E.C.O. Also finishes are better.



Emulsions of new S.E.C.O. allow faster cuts with less tool wear.

*Photos courtesy of
Peter Salmon Co., Glenside, Pa.*

NEW EMULSIFYING OIL KEEPS MACHINES CLEAN, PROTECTS AGAINST RUST, GIVES IMPROVED HARD-WATER EMULSION STABILITY

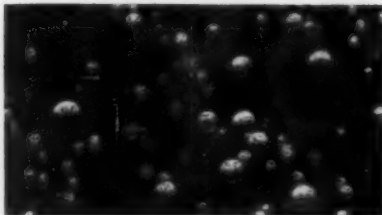
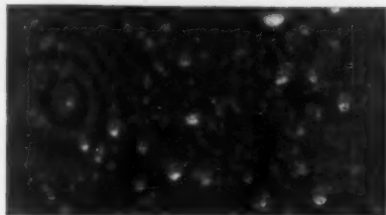
Emulsions of new S.E.C.O. (Sunoco® Emulsifying Cutting Oil) with smaller oil particle size give you the following benefits—

EMULSION STABILITY—In hard-water areas, impartial field tests show that emulsions of new S.E.C.O. stand up better under more severe conditions than those made with other regular emulsifying oils.

DETERGENCY—The excellent wetting properties and detergency of new S.E.C.O. allow dirt and fines to settle quickly out of emulsions. Grinding wheels and machines stay cleaner.

RUST-PREVENTION—The smaller oil particle size in emulsions of new S.E.C.O. gives better metal wetting properties and increased protection against rust and corrosion. See photos below.

If you're a regular user of S.E.C.O., notice how much it has been improved. If you're not, find out what we mean about greater economy and improved production with new Sunoco Emulsifying Cutting Oil. Call your Sun representative, or write to Sun Oil Company, Philadelphia 3, Pa., Dept. MT-4



800x photomicrographs of 10% emulsions. New S.E.C.O. emulsion on left contains 8 times as many oil particles per unit volume as ordinary emulsion on right. Many minute particles in S.E.C.O. emulsion do not show at this magnification.



INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY

Philadelphia 3, Pa.

© Sun Oil Co., 1958

IN CANADA: SUN OIL COMPANY LIMITED, TORONTO AND MONTREAL

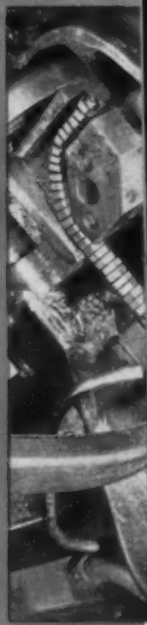
Use postpaid card. Circle No. 212

**another Bath
Tap job well
done—**

for

**Westfield
Metal
Products!**

John Kuivila, Bath Service Engineer (right), checks perfect Class 3 fit of $\frac{3}{4}$ 24 NF stainless steel nuts with Burton W. Johnson, Vice President in charge of Production, Westfield Metal Products Co., Inc., Westfield, Mass.



Close-up of Bath 78 automatic nut shank tapper tap in automatic nut tapping machine.

"Wempy" fasteners are available in all types and sizes — made from stainless steel, monel, titanium, ni-monic and other difficult screw machine metals . . . precision threaded with Bath "ground from the solid" taps.



"Wempy" points with pride to his new, modern Westfield plant.

Economy in purchasing fasteners — *or taps*, is a false factor when based on price alone. You gain many times over with extra dependability, long life and uniformity — Bath Tap features that save time and money in the long run. We'll be glad to hear from you about your threading requirements.

Westfield Metal Products specializes in top quality fasteners and have built an outstanding reputation throughout the industry for their complete line of "Wempy" products. This is what they say about their use of Bath Taps:

"John Bath & Co., Inc. have served as one of our two exclusive tap sources for over 20 years, based on tap quality and uniformity. We require many special threads with close fits and have always found Bath engineers able to solve our many unusual tapping problems. Quality and service are rigid standards that we appreciate in our suppliers — since we also observe these same standards in our own manufacture of fasteners."

JOHN BATH & CO., Inc.
14 Mann St., Worcester, Mass.

CYLINDRICAL AND THREAD GAGES • GROUND THREAD TAPS • INTERNAL MICROMETERS

Use postpaid card Circle No. 213

*Any tapped or drilled
a Gold Mine of Savings
... when you use*

MORSE

Electrolized Tools

This exclusive Morse process *penetrates the metal*, and becomes part of its atom-structure . . . puts extra durability under skin of the cutting tool.

That's why so many cost-conscious buyers specify Morse *Electrolized* Tools . . . because they know it's the only way to get as much as 100%

longer tool life, with every hole cleanly and precisely cut.

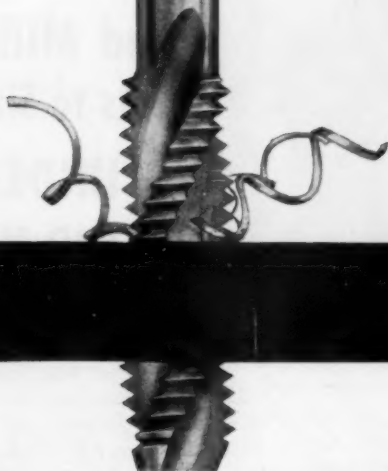
Proof? All you have to do is ask your Morse-Franchised Distributor.

**MORSE TWIST DRILL & MACHINE CO.
NEW BEDFORD, MASS.**

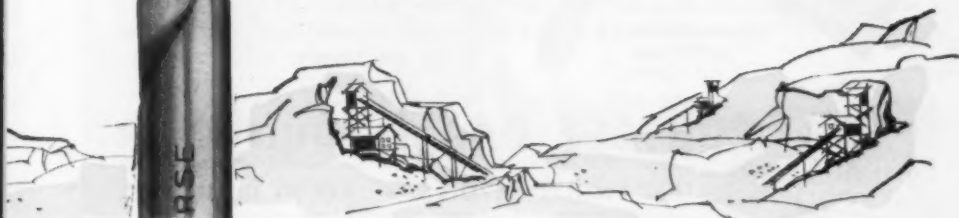
*A Division of VAN NORMAN INDUSTRIES, INC.
Warehouses in
New York, Chicago, Detroit, Dallas, San Francisco*

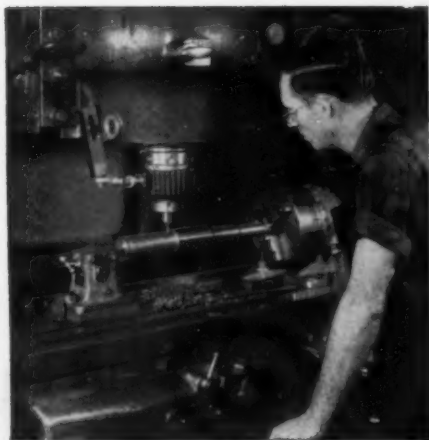
ed hole is

MORSE

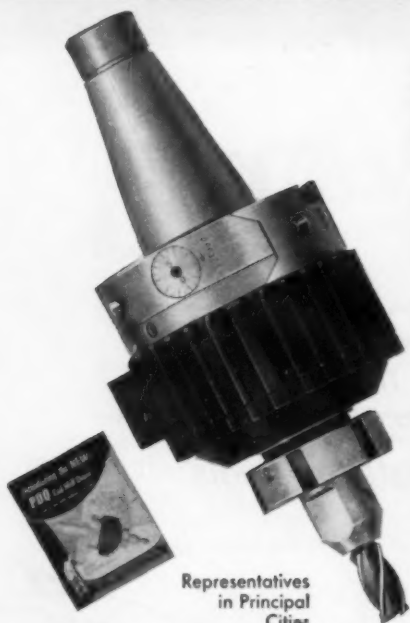


MORSE
means
"THE MOST"
in Cutting Tools





NEW P.D.Q. End Mill Driver... Cuts to Size with **UNDERSIZE END MILLS***



Representatives
in Principal
Cities

*Now you can utilize your inventory of undersize end mills and still cut to size. The new P.D.Q. end mill driver can be offset positioned by micrometer adjustment to compensate for undersize mills. In addition, the orbital offset motion increases chip clearance, insures square slots and permits milling true to centerline. One pass cutting of key ways is now possible.

The End Mill Driver has a four to one speed ratio between spindle and cutter which enables the Driver to do the work while the machine actually loafs. This new P.D.Q. tool offers a new concept in end mill cutting . . . Write for complete information.



PORTAGE Double-Quick, Inc.

1037 SWEITZER AVENUE • AKRON 11, OHIO

Brehm trimmed

in one press stroke



Slow, costly, multiple "horn" operations and distorted edges due to "pinch" trimming can be eliminated by a Brehm Die. Operating on principles different from ordinary trimming methods, the Brehm "Shimmy" Die with angular cams causes the shearing edges to cut four ways in a single press stroke.

Materials, thickness, shapes and sizes look alike to a Brehm "Shimmy" Die. Shells can be trimmed that are drawn from sheet gold, silver, stainless steel, mild steel, copper, brass, zinc, aluminum, fiber and the flash from some types of moulded articles made of rubber and similar material. Metal

thickness varying from .005 brass to .250 steel can be trimmed. Shell sizes vary from metal ferrules for fountain pen barrels to electric refrigerator doors. Clean, flat, burr free edges are assured. Edge contours can be straight or curved, with multiple notches and projections.

When model changes alter the part design, or if you wish to handle an entirely new part, you only need to substitute cutting adapters.

Send part prints to your tool room in Dayton for quotation on Brehm "Shimmy" and related dies, such as blank, form, pierce.



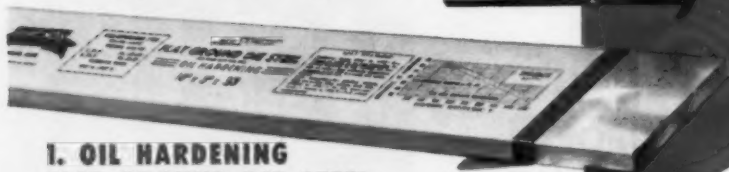
ENGINEERING • PROCESSING • BUILDING • TOOLS
DIES • SPECIAL MACHINES • VULCAINAIRE JIG
GRINDERS • MOTORIZED ROTARY TABLES • BREHM
"SHIMMY" AND RELATED DIES • AUTOMATION

VULCAN TOOL CO., YOUR TOOL ROOM IN DAYTON
BREHM DIE DIVISION • 762 LORAIN AVENUE • DAYTON 10, OHIO



SIMONDS

gives you all



1. OIL HARDENING FLAT GROUND DIE STEEL

Simonds quality-controlled tool steel . . . precision ground . . . ready-to-use . . . comes in 1001 stock sizes for 1001 uses: punches, dies, machine parts, small tools, etc. Spheroidize-annealed for best machinability. Wide hardening range. Oil quench 18" and 36" lengths . . . flats and squares . . . individually packaged. *Chemical Analysis:* C .85-.95, Si .20-.35, Mn 1.30-1.50, Mo .20-.30



2. AIR HARDENING FLAT GROUND DIE STEEL

This 5% chrome, spheroidize-annealed tool steel has exceptional wear-resistant qualities yet is easy to machine and heat treat. Ground to accurate dimensions . . . suitable for a multiplicity of uses . . . individually packaged in a wide range of stock sizes . . . flats and squares . . . standard 36" lengths (18" lengths also furnished, if desired). *Chemical Analysis:* C .95-1.05, Cr 5.00-5.50, Si .30-.50, Mn .50-.70, Mo .90-1.10, V .20-.30



3. and the NEW LOW CARBON FLAT GROUND DIE STEEL

Here's a fine-grained, forging quality, silicon-killed steel that offers important savings on jigs, fixtures, patterns, stripper plates, punch pads, die plates, die-blocking shims . . . and parts that don't require heat treatment, or in some cases just case-hardening. This new line of low-cost steel rounds out the Simonds line of Flat Ground Steel, has equally fine finish, with excellent welding quality and machinability. Furnished in a wide range of flats from $\frac{1}{4}$ " to $1\frac{1}{2}$ " thick and $\frac{1}{2}$ " to 16" wide, and in squares from $\frac{1}{4}$ " to $2\frac{1}{2}$ ". All sizes come in standard, ready-to-use 24" lengths, individually packaged. *Typical Chemical Analysis:* C .18, Mn .50, Si .20, S .04, P .04

Factory Branches in Boston, Chicago, Shreveport, La., San Francisco and Portland, Oregon
Canadian Factory in Montreal, Que. Simonds Divisions: Simonds Steel Mill, Lockport, N. Y.,
Heller Tool Co., Newcomertown, Ohio
Simonds Abrasive Co., Phila., Pa., and Arnold, Que., Canada

GET FULL DETAILS
PROMPT DELIVERY OF
ALL SIZES
FROM YOUR SIMONDS DISTRIBUTOR



For Fast Service

Complete Stocks

Call your

SIMONDS

"SAW AND STEEL CO." DISTRIBUTOR

SIMONDS
SAW AND STEEL CO.

Use postpaid card. Circle No. 218

MACHINE and TOOL BLUE BOOK

BREAK THRU THE
COST BARRIER with ...

CARBIDE DIES!

- ✓ LESS DOWNTIME
- ✓ LONGER LIFE
- ✓ BETTER STAMPINGS
- ✓ LOWER COST PER BLANK

Harig Carbide Dies typically out-produce steel dies 10 to 1 per sharpening and per die . . . yet cost only 1.5-2 times more than a steel die. Thus, a Harig Carbide Die affords you *true economy*. Harig is the industry leader because it has the skilled craftsmen and most modern equipment to build a better die.



Harig

Manufacturing Corp.

8788 W. HOWARD ST. • CHICAGO 31, ILL.



WRITE FOR FREE CATALOG

Remember
Harig serves all America . . . so, regardless of location, be sure to contact us for a quotation on your next tooling program.

This Bulletin...

(yours for the asking)

Acme-FETTE



CATALOG
NAF-57A

self opening

Thread Rolling Heads

For Rotating or Non-Rotating Spindle Machines

"See the Acme-Fette
demonstrated at the
A.S.T.E. Tool Show in
Philadelphia May 1-8,
Booth 2115"

Pressing Tool Division • THE NATIONAL ACME COMPANY • Cleveland 8, Ohio

shows how to get
added threading production

from your present automatics •

drill presses • turret or

hand lathes • threading machines

or other metal turning equipment

at only a fraction of the cost of specialized equipment

ACME-FETTE Self-Opening Thread Rolling Heads and Rolls *installed on your present metal turning equipment* will make that equipment more versatile . . . more productive. And you will maintain closer control over threading quality and deliveries.

Acme-Fette Heads roll all parallel thread forms, at speeds equal to turning speeds with high speed steel tools—up to 5 times faster than conventional thread

cutting—on all types of horizontal or vertical machines equipped with either rotating or stationary spindles.

If the job calls for threading from the end, you can't beat an Acme-Fette for speed, accuracy, surface smoothness, versatility, or long life.

Send for Bulletin NAF-57A today, and you'll get a new concept of what thread rolling—the ACME-FETTE way—can do for you.

National Acme

THE NATIONAL ACME COMPANY • 177 E. 131ST STREET • CLEVELAND 8, OHIO

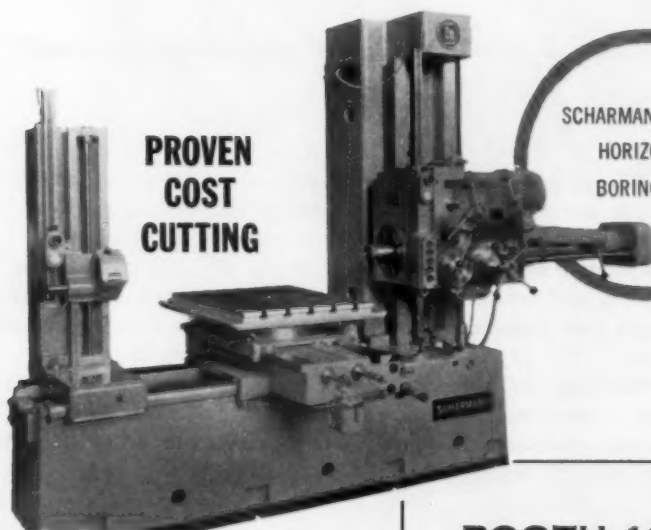
Use postpaid card. Circle No. 221

See

.....

SCHARMANN

So much boring mill for so little! If you think you can't afford a universal boring mill in your plant or machine shop, the Scharmann WB 75 will be a most pleasant surprise. It will also show you the key to that perplexing problem—How do we increase flexibility and decrease costs at the same time? If you have "orders from the top" to cut down on equipment and personnel without cutting down on versatility and workmanship, this machine is definitely for you.



**PROVEN
COST
CUTTING**

**SCHARMANN WB 75
HORIZONTAL
BORING MILL**

**BOOTH 1015
CENTER HALL**

at the ASTE Show

.....

"See to appreciate" was never so true as with this unique design. Its radical departure from standard side-head suspension can mean a radical change in your evaluation of horizontal boring mills for your plant's requirements. By suspending the headstock between two round steel columns, Scharmann has combined in one boring machine the rigidity of a production mill and the versatility of a precision coordinate mill.

A General Electric Speed Variator provides smooth, controlled, variable speed, ultimate DC drive flexibility.

**UNIQUE
HEADSTOCK
SUSPENSION**

SCHARMANN FB 40
HORIZONTAL
BORING MILL



**SCHARMANN
MACHINE CORPORATION**

337 Boulevard of the Allies • Pittsburgh 22, Pa.
Manufacturers of Boring Mills Since 1884

VK

Set No. 84

GEAR MEASURING WIRES



A Complete Combination of 4 **VK** Gear Wire Sets covering Series 1.92, 1.728, 1.68 and 1.44

Illustrated above is the newest Van Keuren Gear Wire Set No. 84

Set No. 84 is a multi-purpose set designed to cover a range of 26 diametral pitches from 2 to 80 with wires from each of four different and popular wire series:— 1.92, 1.728, 1.68 and 1.44. Because of duplication of wire sizes, this set which would normally involve 104 sizes reduces to 84 sizes. The economy here is evident.

The latest VK Gear Measuring Tables, available in Catalog and Handbook No. 36, have been arranged for use with all four of these gear wire series. Thus the set can be used in conjunction with the tables in many ways, such as:

Tooth Thickness } Measuring tooth thickness of internal and external spur gears, splines and serrations.

Helical Gears } Measuring helical gears when normal diametral pitch is one of the 26 for which the set was designed.

Involute Profile } Checking involute profile by using more than one wire size. Series 1.92, 1.728 and 1.68 for externals. Series 1.68 and 1.44 for internals.

Enlarged Pinions & Reduced Gears } Measuring enlarged pinions and reduced gears. Tables are now available for the first time in VK Circular G38, giving measurement values and change factors for reduced gears which mate with pinions enlarged in accordance with the latest American Standard covering involute fine pitch gears.

Complete information regarding the use of gear measuring wires is contained in a fifty-page section of the VK Catalog and Handbook No. 36. Included in this section are the most complete gear measuring tables available, as well as all necessary formulas and equations for computing non standard spur and helical gears. Numerical examples are included. This book is available on request.

VK Gear Wires are held within .000025" for roundness and exact size. Surface finish is 1.5 RMS or better.

If complete coverage of all series is not necessary, sets covering single series such as 26 Ex. or 26 Int. are also available. See Catalog No. 36.

VK

39th YEAR

THE *Van Keuren* CO.,

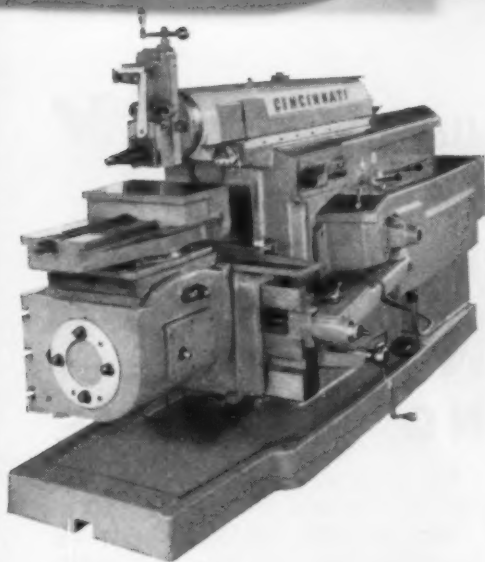
177 WALTHAM STREET, WATERTOWN, MASS.

Optical Flats . . . Light Wave Equipment . . . Light Wave Micrometers
... Gage Blocks . . . Wire Type, Taperlock and Trilock Plug Gages
... Master Setting Disks . . . Thread Measuring Wires . . . Gear
Measuring Wires . . . Carbide Plug Gages . . . Carbide Pivots . . .
Precision Lapping Service.



Use postpaid card. Circle No. 224

MACHINE and TOOL BLUE BOOK



Cincinnati standard features: extra savings at no extra cost

Cincinnati Shapers give you so many money-saving features per dollar invested that they can be the most profitable equipment in your shop.

1. This 2" cut, .030" feed, demonstrates the ability of the 50 psi automatic lubrication system to maintain oil films under heavy loads.

2. Brushless electromagnetic brake and clutch insure fast easy operation. No adjustment is required.

3. Both vertical and horizontal rapid traverse are standard Cincinnati features which substantially reduce setup and cutting time.

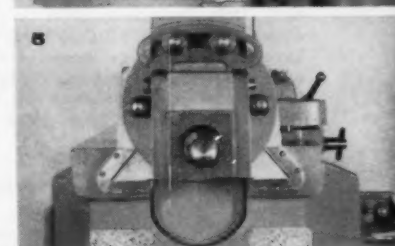
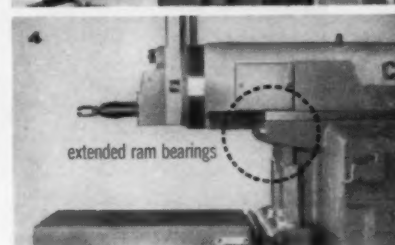
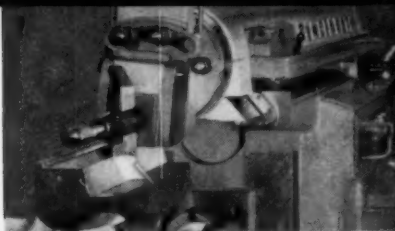
4. Extended ramway bearings increase ram support, and minimize wear. Full table clearance to the column gets work closer to the column, minimizes overhang.

5. The vee ramways are integrally cast with the column. Ramway rigidity is increased by eliminating joints. Full length tapered gib provides for easy adjustment, maintains accuracy.

Write Dept. H for Bulletin "Cincinnati Rigid Shapers."

Shapers / Shears / Press Brakes

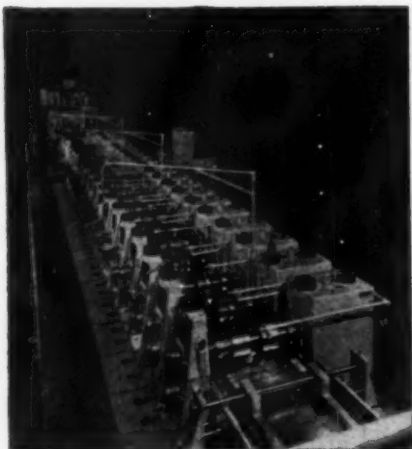
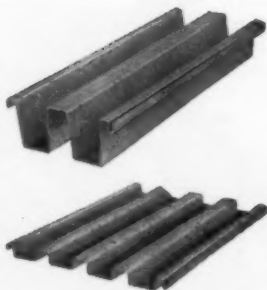
THE **CINCINNATI**
SHAPER co.



Cincinnati 11, Ohio

steel roof decks and flooring
cold rolled up to 200 f.p.m.
on this mammoth

ARDCOR ROLL FORMING MACHINE



ARDCOR Roll Forming Machines feature: Unit Design—spindles in self-contained SEPARATE HOUSINGS, with speed reducers; Large Range of Vertical Centers; Double Bearing Design of Drive Housings; All Bearings are Anti-Friction; Micrometer Type Dials and Scales.

This entire automated production line is 15 ft. wide 6 ft. high and 120 ft. long with total equipment weighing approximately 175 tons. Mill stands are completely moveable, having 4 1/2 in. dia. spindles with 42 in. roll space. Fed by 20,000 lb. steel coils, the twenty-two roll passes form the 1 1/2 in. deep by 2 ft. wide sections. The mill operator controls the loading, lining-up and feeding of the coil stock from a control bridge at entry of the mill. A 150 ton Straight Sided ARDCOR Press cuts off sections to proper lengths.

ARDCOR Roll Forming Machines are available in six standard sizes, other sizes to customer specifications.

If your products can be cold roll formed, ARDCOR engineers can supply advancements in design and construction to produce them better . . . at greater speeds and profit!

Consult our Engineering Facilities, without obligation . . .



American ROLLER DIE CORP.

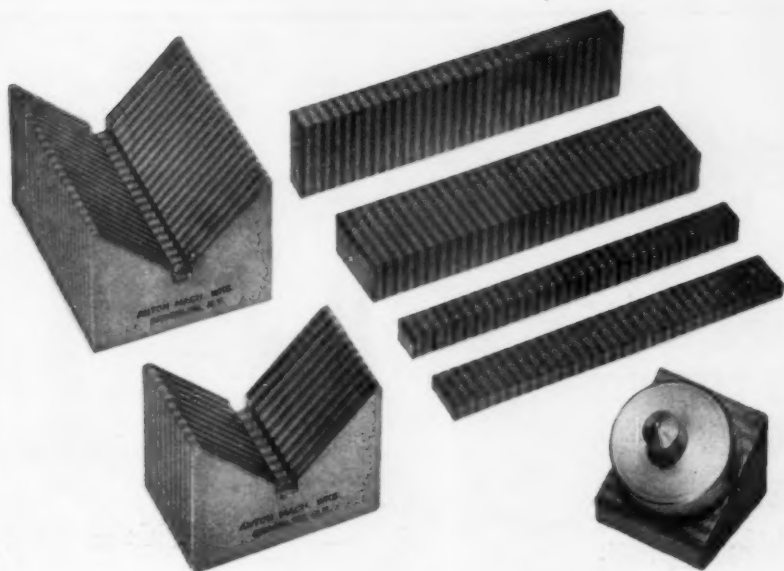
29560 Clayton Avenue

Wickliffe, Ohio

DESIGNERS AND MANUFACTURERS. All Sizes and Spindle Diameters of Roll Forming Machines, Welded and Lock-Seam Tube Mills • Forming Rolls, Tying and Pipe Rolls • Straightening, Flattening and Leveling Rolls • Cut-off Machines

Use postpaid card. Circle No. 226

MACHINE and TOOL BLUE BOOK



**Anton
Magnetic
Products**

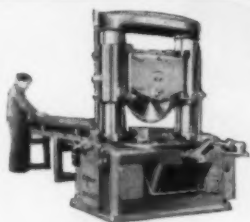
**Parallels, V-Blocks,
Adjustable V-Blocks,
Unfinished Blanks and
Diamond Holders**

- Eliminate expensive grinding set-ups.
- Speed up production.
- May be cut and shaped to fit your job.
- Highest Quality — Reasonably Priced.

Write for illustrated catalogue sheet, listing prices, features and specifications

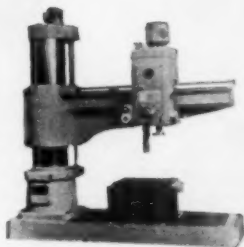
Anton Machine Works

1226 FLUSHING AVENUE • BROOKLYN 37, NEW YORK



OHLER Hydraulic
Cold Sawing Machines,
Saw Sharpening Machines
and Segmental Saw Blades.

**THESE MACHINES WILL
BE DEMONSTRATED AT
BOOTH 1456
ASTE Show
Philadelphia.**

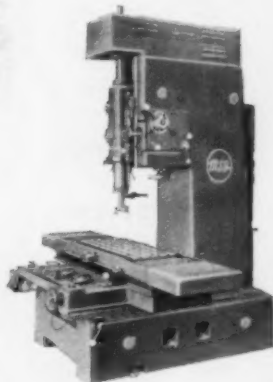
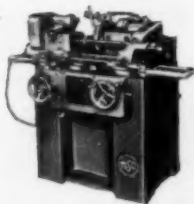


WEBO Upright and
Radial Drilling Machines.



TRUMPF Curve, Cutting-Out
and Nibbling Machines,
Electric Hand Shears & Nibblers.

MSO Universal and
Hydraulic Cylindrical
Grinders & PFRL Jig
Boring Machines.



Imported and Distributed by

JAMES W. GEORGE MACHINERY CO.

519 East Jefferson Ave.

Detroit 26, Mich.

Tools you can Trust
DISTRIBUTED BY
Men you can Trust



Heller *Job Tempered* **Tools**



TRUSTED BOTTLENECK BREAKERS

Heller

FLAT
GROUND Steel

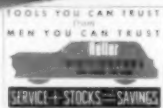
SPECIFY HELLER OIL HARDENING OR AIR HARDENING DIE STEEL* when you want dies, punches, gauges and other wear-resistant parts in a hurry. Both are non-deforming, both are spheroidize annealed for easy machining and uniform hardening. They come in more than 1300 stock sizes in 18" and 36" lengths . . . all in individual packages that carry fool-proof heat-treating directions.

SPECIFY HELLER LOW CARBON STEEL for speedy production of jigs, fixtures, patterns and parts that require no heat treating or just case hardening. This fine-grained silicon killed steel is of forging quality. Its wide range of flats and squares in standard 24" lengths covers many uses.

ALL HELLER FLAT GROUND STEEL IS READY TO USE! Accurately dimensioned, and smooth finished to 25-35 micro inches, it's ready for immediate scribing and shaping. You waste neither material nor time.

YOU CAN TRUST YOUR HELLER DISTRIBUTOR TO FILL YOUR NEEDS! This dependable source of Heller Job-Proved products tailors his stocks and service to fit your specific requirements . . . actually serves as your Outside Tool Room.

* Analyses Recommended by Leading Consulting Metallurgists

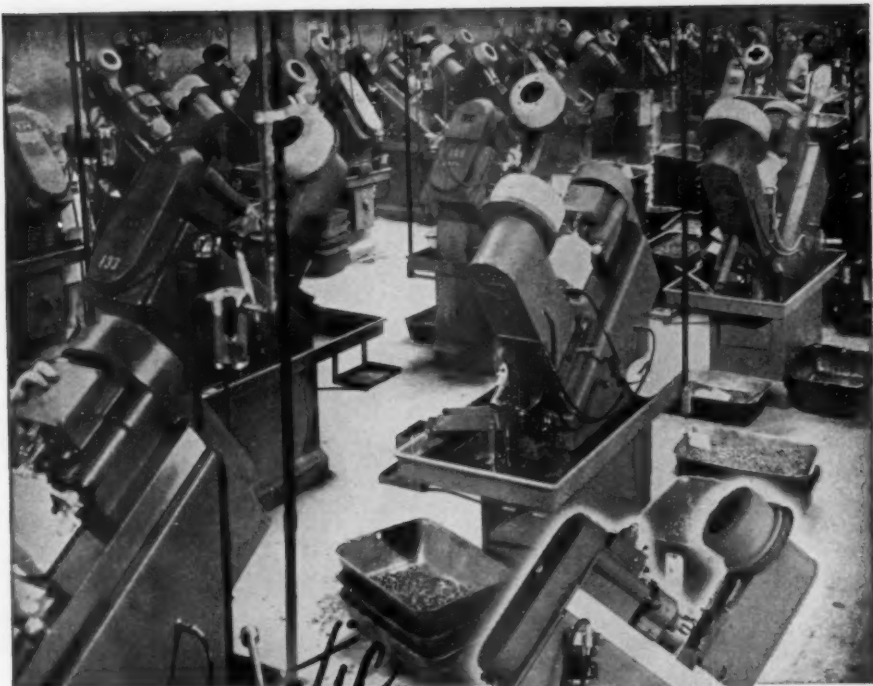


HELLER TOOL CO.



America's Oldest File Manufacturer
NEWCOMERTOWN, OHIO
Subsidiary of Simonds Saw and Steel Co.

Branches and Warehouses: Newark • Detroit • Chicago • Shreveport • Los Angeles • Portland, Ore.



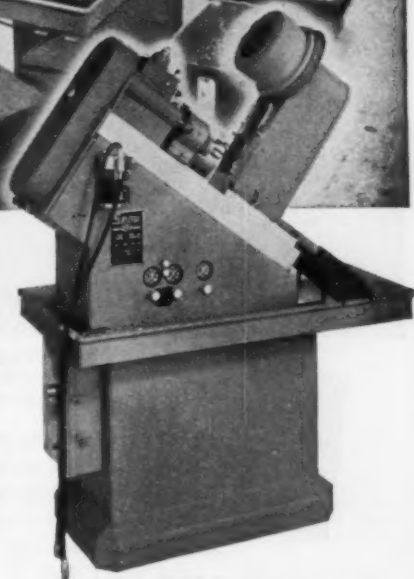
Automatic

NUT TAPPING MACHINES

This installation at *Shakeproof, Division of Illinois Tool Works, Elgin, Illinois*, is an illustration of productivity—with precision.

Simplicity of set-up and lower operational costs can make your Nut Tapping Department one of the most efficient and profitable in your plant. Submit samples and prints for a comparison with your present method.

VERTICAL DRILLING MACHINES
VERTICAL TAPPING MACHINES
VERTICAL THREADING MACHINES
TWO SPINDLE MACHINES
ANGULAR MACHINES
NUT TAPPING MACHINES
HORIZONTAL MACHINES
DRILLING AND TAPPING UNITS
AUTOMATIC JIGS AND FIXTURES
DRILL PRESS TAP HEADS



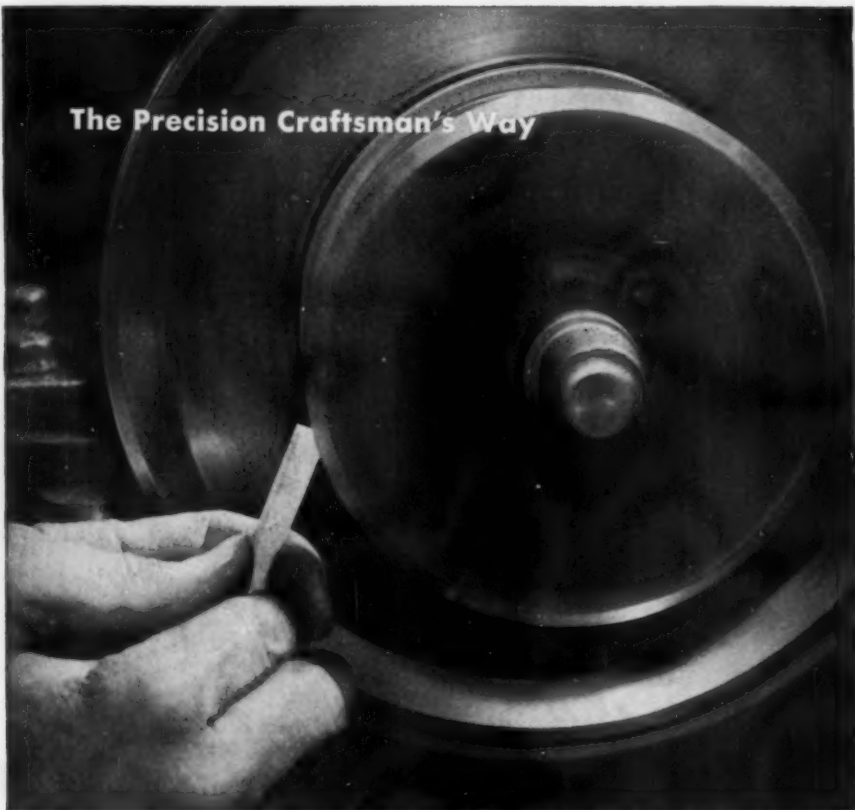
SNOW

MANUFACTURING COMPANY

435 EASTERN AVENUE, BELLWOOD, ILL.

(Suburb of Chicago)

The Precision Craftsman's Way



Deburring the edges of a circular pressure splitter knife with a Hard Arkansas Square File. This follows rough sharpening and puts on the keenest final edge.



FREE: Send for the Hand Stoning Handbook —helpful hints on sharpening, radiusing, chamfering, deburring, and fitting delicate parts. And remember: India and Hard Arkansas oilstone files hold their shape longer ...and *won't dull*. In 35 shapes...97 sizes... for every job.

BEHR-MANNING CO.

TROY, N. Y.

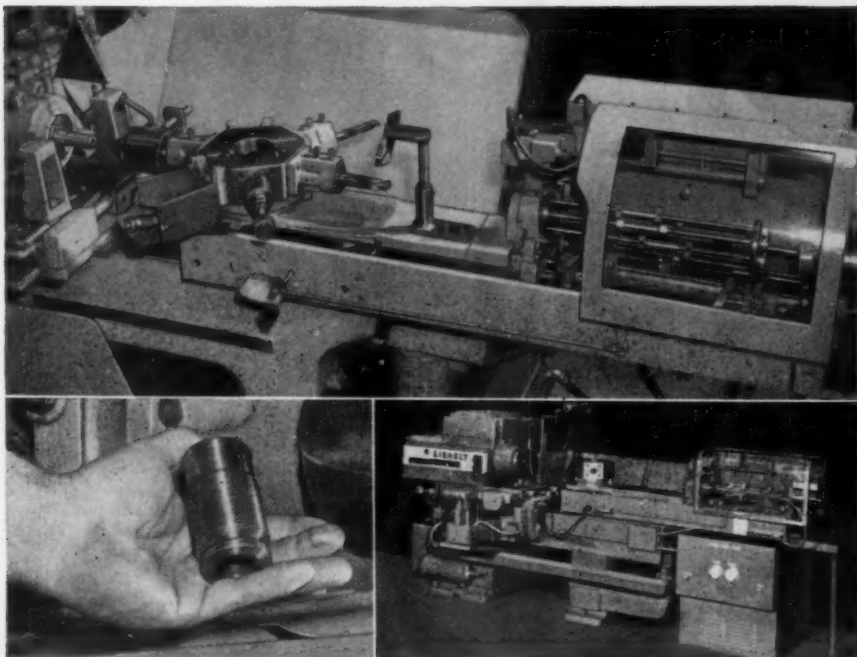
A DIVISION OF NORTON COMPANY



BEHR-MANNING PRODUCTS: Coated Abrasives • Sharpening Stones • Pressure Sensitive Tapes
NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories

Use postpaid card. Circle No. 230

MACHINE and TOOL BLUE BOOK



250% Production Increase with this setup

Gets full automation on small job-lot production runs using hydraulic drive on Gisholt Ram Type Turret Lathe

Floor-to-floor time on the job shown here—a threaded collar $3\frac{1}{2}$ " long with $1\frac{1}{8}$ " diam.—was cut from 8.1 minutes (with hand operation) to just 3.25 minutes. All operations and machine functions are automatically controlled with the Lynn Hydraulic Drive Unit on a Gisholt Ram Type Turret Lathe.

Here's how the finished workpiece is completely machined from bar stock in one fast, automatic operation: The stock is fed pneumatically against a turret stop, chucked, start-drilled, then finish-bored with a large drill. The hydraulic drive backs the drill out automatically to clear the chips, then rapid traverses back to where it left off before dropping into feed to resume

drilling. Spindle speed automatically decreases as tools on the front cross slide form the O.D., drops into lower speed as O.D. is threaded, and into another low speed as radii are formed on the finished part and on the end of the bar stock. A tool on the rear cross slide cuts off the finished part and the job is done in record time.

With its massive design, reserve power and extra spindle speeds, the new Gisholt MASTERLINE Ram Type Turret Lathe is particularly adaptable to complete automatic operation with Lynn Hydraulic Drive. Contact your Gisholt Representative. He has the complete facts—and his wide experience may point the way to more profitable operation for you.



GISHOLT

MACHINE COMPANY

Madison 10, Wisconsin, U.S.A.

WRITE GISHOLT TODAY for all-new, 18-page illustrated Bulletin 1174-B covering features, accessories, tools and floor plans on new Gisholt MASTERLINE Ram Type Turret Lathes.

ASK YOUR GISHOLT REPRESENTATIVE ABOUT GISHOLT FACTORY REBUILT MACHINES WITH NEW MACHINE GUARANTEE

Use postpaid card. Circle No. 231

April, 1958

35

new
BARNESDRIL
HONING TOOL

guarantees
parallelism
concentricity
alignment
in finishing

INTERRUPTED BORES



This new style Barnesdril honing tool is designed for constant alignment-bearing while cutting throughout the length of interrupted bores. Designed with one bank of 4 Barnesdril Plas-T-Clad Honing Stones, the tool has two banks of 3 fiber guides each in front of the stones, and two banks in back of the stones. These guide assemblies are automatically expanded with the stones, keeping the tool firmly supported at all points, to meet the conditions of the bore.

As a result, alignment of all segments of the bore is assured, and any tendency for "bell mouth," characteristic of interrupted bores, is eliminated. The honing tool is equipped with a universal drive shank, and will hone a range of bores within certain limits.

Sketch indicates extreme cutting position at either end of bore length, showing how tool is fully supported with at least two bearing points in any cutting position.



The application sketch shown here represents the honing operation on a rotor sleeve which is actually a series of bores within the part. This tool maintains tolerances of $\pm .00025"$, removing $.004"$ stock from interrupted bore sections, $.875"$ diameter by $8.750"$ overall length. Finish requirements are 40 RMS.

With knowledge of the job requirements, Barnesdril engineers are able to furnish honing tools and abrasives with maximum cutting efficiency for all honing operations. If you have special finishing problems or bore applications, send prints or sample parts for recommendations by Barnesdril engineers. Estimates will be furnished without obligation.

Write for bulletin completely describing new designs in Honing Tools and Abrasives. Ask for Bulletin No.570 E

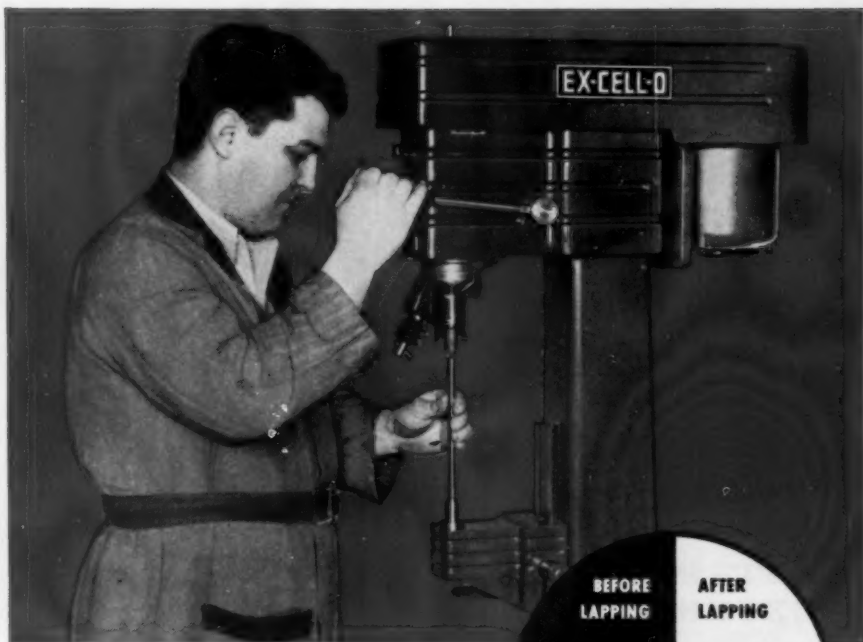


BARNES DRILL CO.

892 CHESTNUT STREET • ROCKFORD, ILLINOIS
DETROIT OFFICE: 13121 Puritan Avenue

Use postpaid card. Circle No. 232

MACHINE and TOOL BLUE BOOK



Don't Scrap — Center Lap!

**EX-CELL-O LAPPING MACHINES DELIVER
HIGH SPEED AND ACCURACY AT LOW COST**

Ex-Cell-O Lapping Machines eliminate out-of-line, out-of-round and incorrect angles in centers. Result: Guaranteed accuracy in subsequent machining, scrap is cut by a healthy margin. Built by Ex-Cell-O, these machines deliver precision with ease. Remember, don't scrap—center lap—write for Bulletin 40271—or, better yet, call your Ex-Cell-O Representative.

57-13



Center Lapping corrects inaccuracies, assuring precision in subsequent operations between centers.

XLO EX-CELL-O FOR PRECISION

EX-CELL-O
CORPORATION
DETROIT 22, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE
TOOLS • GRINDING AND BORING SPINDLES
• CUTTING TOOLS • TORQUE ACTUATORS •
RAILROAD PINS AND BUSHINGS • DRILL
JIG BUSHINGS • AIRCRAFT AND MISCEL-
LANEOUS PRODUCTION PARTS • DAIRY
EQUIPMENT

SOLIDLY SOLD...



**AFTER 50 YEARS'
EXPERIENCE**

Wagner Litho Machinery relies 100% on
**LELAND-GIFFORD
DRILLING MACHINES**

When plant facilities were increased recently, Wagner Litho Machinery Division of National-Standard Company continued to select Leland-Gifford Drilling Machines.

Over 50 years' experience with many makes of drilling machines has convinced this company that Leland-Gifford consistently delivers high production with great accuracy and economy.

With management favoring the time-saving,

cost-cutting features and shop men sold on the convenience and ease of operation, it's easy to see why Wagner Litho is 100% Leland-Gifford equipped.

Ask your nearby Leland-Gifford sales engineer to demonstrate the many advantages that make Leland-Gifford Drilling Machines the choice of leading companies in every industry.

LELAND-GIFFORD
Drilling Machines

WORCESTER 1, MASSACHUSETTS, U. S. A.

Branch Offices:

CHICAGO 5
2515 W. Peterson Ave.
CLEVELAND 11
P. O. Box 853

DETROIT 11
10429 W. McVish Rd.

INDIANAPOLIS 6
P. O. Box 1051

LOS ANGELES
2820 Leona Blvd.,
Vernon 58, Cal.

NEW YORK
75 S. Orange Ave.,
South Orange, N. J.

ROCHESTER 11
P. O. Box 24,
Charlotte Station

Use postpaid card. Circle No. 234

MACHINE and TOOL BLUE BOOK

NEW *and* needed JUNIOR CYCLONE DUSKOLECTOR

by
Hammond

The NEW Hammond Junior Cyclone DusKolector provides a low-cost means of collecting dust from light and medium dust sources. It also fits in where filter dust collectors have not been satisfactory.

Built to usual Hammond standards, it has the same features as the larger Cyclone DusKolectors. Blower wheel is self-cleaning paddle type, dynamically balanced and mounted on the exhaust, not the inlet side. Bag has zipper for quick cleaning. Two sizes available, giving 400 or 600 CFM.

Where to use Cyclone DusKolectors

— machine shops and tool rooms for collecting cast iron dust from mills, lathes, surface grinders, tool and cutter grinders, internal grinders, etc. Polishing and buffing departments, crating rooms, grinding departments and other dust producing sources.

Hammond DusKolectors Don't Cost, They Pay — by providing healthier working conditions, protecting costly machine tools and reducing cleaning and painting costs.

Write for Catalog



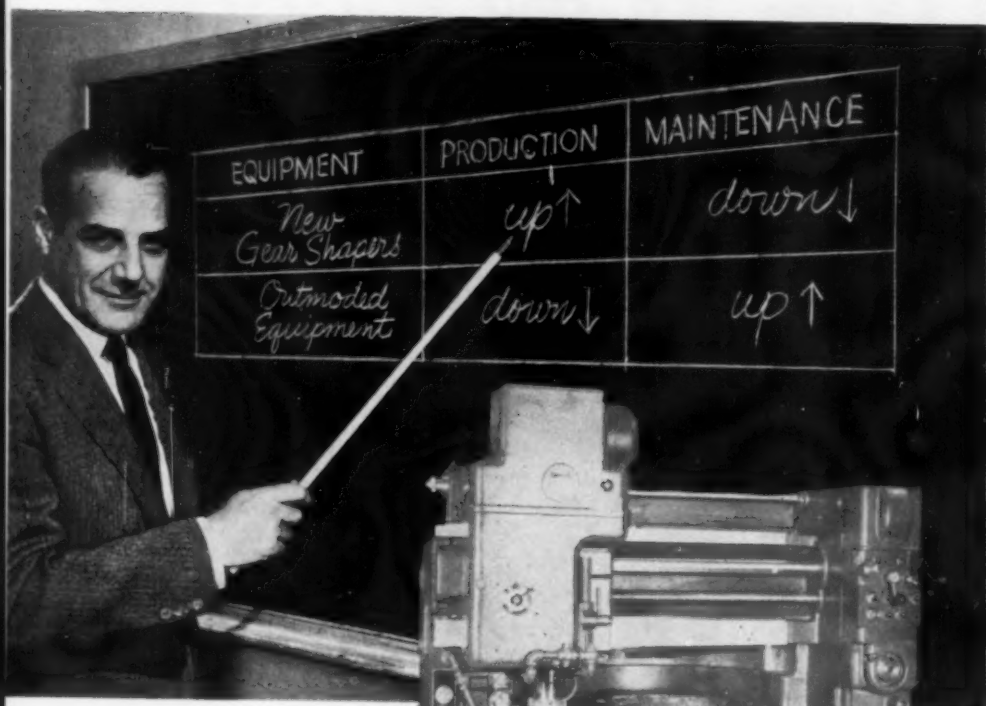
Model JCB-4 is easy to install and can be mounted on casters for portability.

Hammond Machinery Builders
INC.

1614 DOUGLAS AVENUE • KALAMAZOO, MICHIGAN

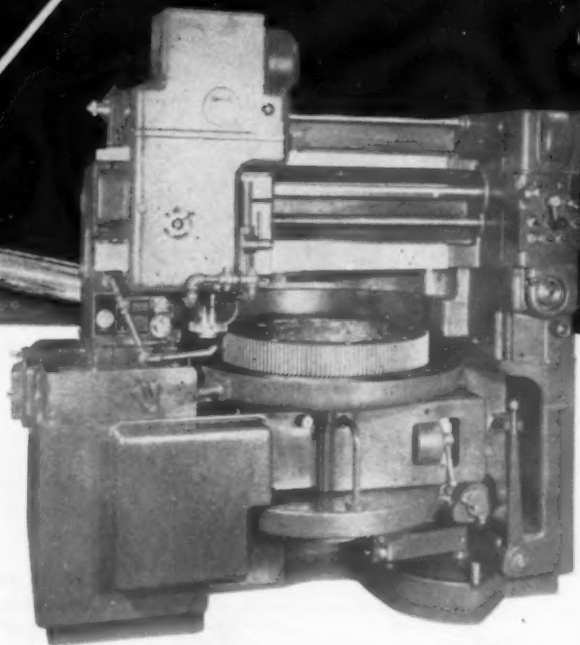
See us at Booth 1704, ASTE SHOW, May 1-8, Philadelphia
Use postpaid card. Circle No. 235

Modernize FOR



EQUIPMENT	PRODUCTION	MAINTENANCE
New Gear Shapers	up↑	down↓
Outmoded Equipment	down↓	up↑

Productivity: A 23.250" P.D., 4 D.P. steel gear is cut in 2½ hours on a modern Fellows 36-Type Gear Shaper. Older machine required ten hours.



THE
PRECISION
LINE

LOWER COSTS

with new FELLOWS 36-TYPE Gear Shapers

Two new Fellows 36-Type Gear Shapers can produce more than three or four older machines...and give you extra production versatility, too. In many plants, new Fellows production equipment has lowered unit production costs by more than half, earned back its cost in three years or less.

Fast, accurate, and simple to set up for a wide range of jobs up to 36" P.D., the Fellows 36-Type is ideal for short runs of varied parts as well as for long runs. Rigid, husky construction permits close tolerances on internal or external spurs, helicals, and herringbones, as well as an almost unlimited variety of cams, splines, and other non-involute shapes. Cutter speeds range from 18 to 300 strokes per minute.

Why not ask a Fellows Representative to *show* you in your plant where you can cut production costs with newer machines?

Write, wire, or phone any Fellows office.

THE FELLOWS GEAR SHAPER COMPANY

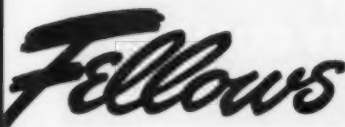
78 River Street, Springfield, Vermont

Branch Offices: 1048 North Woodward Ave., Royal Oak, Michigan

150 West Pleasant Ave., Maywood, New Jersey

5835 West North Ave., Chicago 39, Illinois

6214 West Manchester Ave., Los Angeles 45



Gear Production Equipment

NEW PRECISION SWISS EQUIPMENT

FRIMATIC Electronic Gear Cutter & Hobber

210 pcs/HR.

Steel Pinion

Diam.0.19"

Length ...0.27"

No. Teeth...7

Fine Finish



Fastest and most precise machine of its kind... COMPLETE AUTOMATION in the production of gears, pinions and similar pieces used in precision instruments..

- AUTOMATIC LOADING
 - AUTOMATIC INDEXING
 - ELECTRONIC CONTROLS
 - AUTOMATIC CYCLING
- and measuring to necessary finishes.



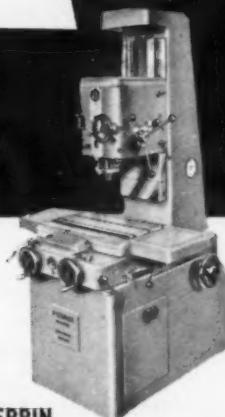
500 pcs/HR.
Brass Gear

Diam.0.47" No. Teeth ...15
Length ...0.62" Fine Finish



HAPAS Automatic Hob & Module Cutter Grinder

Unique design adds hours to tool life
... grinds in axial direction, protecting
tooth ends.



Complete Line of Swiss Inspection Equipment



MICROSCOPES



**HARDNESS
TESTERS**



COMPARATORS

PERRIN SWISS JIG BORER

With most advanced optics ...
full tooling available. Highest
Swiss precision ... New Com-
petitive Prices

Write Today
for Detailed
Specification
Brochures

NEW EQUIPMENT DIVISION

S & S MACHINERY COMPANY

135-53rd STREET
BROOKLYN 32, NEW YORK
HYacinth 2-7400

6945 BANDINI BOULEVARD
LOS ANGELES 22, CALIF.
Raymond 3-9231

ALMCO

has the right barrel finishing equipment for you!



MULTI-COMPARTMENT BARRELS

For a wide variety of parts or small quantity runs where fixtures would be too costly. Ideal for short to medium cycle runs that permit re-use of com-

pounds. These custom designed barrels have automatic forward and reverse, any combination of compartments or doors.

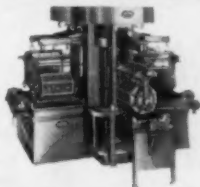


ALMCO'S "ADVANCED DESIGN" SERIES

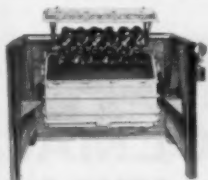
Thirteen great models in this series! These machines feature a wide range of variable speeds (infinite from 6 to 30 r.p.m.), making possible economical deburring and finishing of the greatest variety of parts.

SUB-O-MATIC AUTOMATED SYSTEMS

Almco's exclusive submerged unit is an automatic, "assembly line" system for micro-

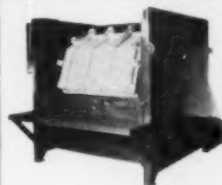


precision deburring and finishing of small parts in quantity. Saves labor, speeds up processing and flow of high production parts. Slashes compound expense to minimum.



"FIXTURE" TYPE BARRELS

Pioneered by Almco for processing large and intricate parts. Custom designed fixtures hold parts securely, prevent part-on-part impingement and allow abrasive action to reach all surfaces, cavities, slots, etc. Automatic forward and reverse controls.



CUSTOM-DESIGNED BARRELS

Almco designs and manufactures special barrels of all types for problems where standard equipment cannot be effectively used. These range from the smallest type

to the largest fixture barrel such as the 60" diameter x 60" length barrel shown above. Special large triple flat doors are also available.

SMALLER MACHINES

Twin barrel machines manufactured by Almco are the standard of the industry for shops processing small lots of parts and for companies with large lots of small parts. Also ideal for sample processing, barrel finishing research and development work, and as auxiliary equipment.



See Barrel Finishing In Action
At Our Display, Booth 2101,
ASTE Show, Philadelphia

ALMCO

QUEEN PRODUCTS, INC.

44 Marshall Street • Albert Lea, Minnesota
Subsidiary of KING-SEELEY Corporation
Sales Engineering Offices in Chicago, Detroit, Los Angeles, Newark, New Haven and Philadelphia

IN ENGLAND: Almco Division of Great Britain, Ltd., Bury Mead Works, Hitchin, Herts, England



**"ARMED" For MORE
VERSATILE
WORK!**

NEW GREAVES TOOLMAKERS OVERARM

Here's the way to add new "firepower" to toolroom milling operations! Install in your toolroom a GREAVES MILL equipped with this new Toolmakers Overarm.

You'll discover new versatility for milling intricate jig and fixture work, for keywaying, slotting and angular milling. Two graduated swivels permit mounting the spindle head in almost any angle for milling, drilling, spot facing and related operations.

Powered by an independent 2 HP motor, the unit is driven through helical gears. Eight speeds may be selected with convenient controls operating speed change clutches. A hand-fed quill attachment provides 4" tool travel to the spindle. Arbor support fits overarm, permits arbor type milling without changing overarm.

Write for Complete Specifications and Prices

GREAVES MACHINE TOOL DIVISION
J. A. FAY & EGAN COMPANY
2600 Eastern Avenue, Cincinnati 2, Ohio

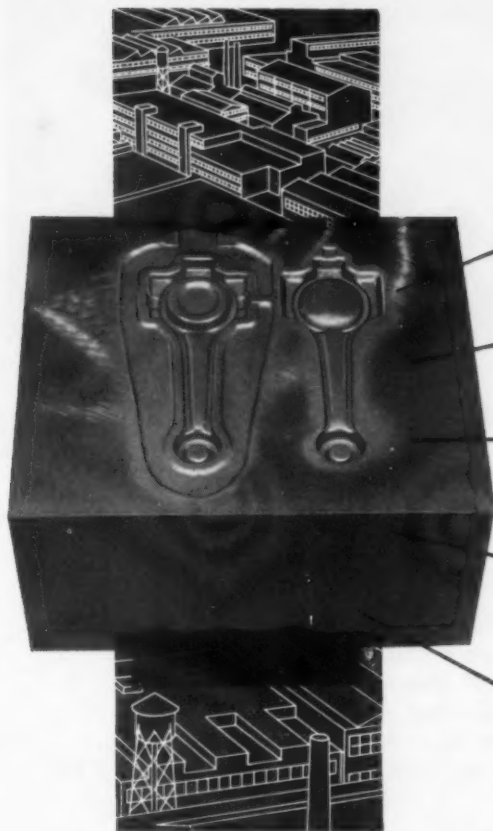
- Swivels permit any angular setting of spindle head.
- 2 HP Independent motor drive.
- 8 speeds from 175 to 1750 RPM.
- Quill has 4" hand feed.
- Spindle equipped with No. 50 N. S. taper; reduced to No. 2 Morse taper when Quill Attachment is used.
- Gears run in oil bath.
- Full vision oil level gauge.

RACK FEED. The overarm is equipped with rack feed for positioning over work.

Manufacturers of
GREAVES MILLS
"the MOST Mill for
the LEAST Money!"

Use postpaid card. Circle No. 242

...somewhere
this forging die
is making history!



Both halves of the die were
Eloxed in only 50 hours.

Elox equipment used to create
the impression costs less than
half of conventional tooling
equipment.

After washout, Elox equipment
will have it back in service
in seven hours.

In our Pre-purchase
Evaluation division we will
demonstrate how Elox can
machine the cavities in your
closed impression dies at
75% of your present cost.
Write or phone today.

10" Connecting Rod Forging
Max. depth impression: $\frac{3}{8}$ "
Min. depth impression: $\frac{1}{16}$ "
Tolerances: \pm or $- .003$ "

elox^{*} *corporation of michigan*
* T. M. Reg.

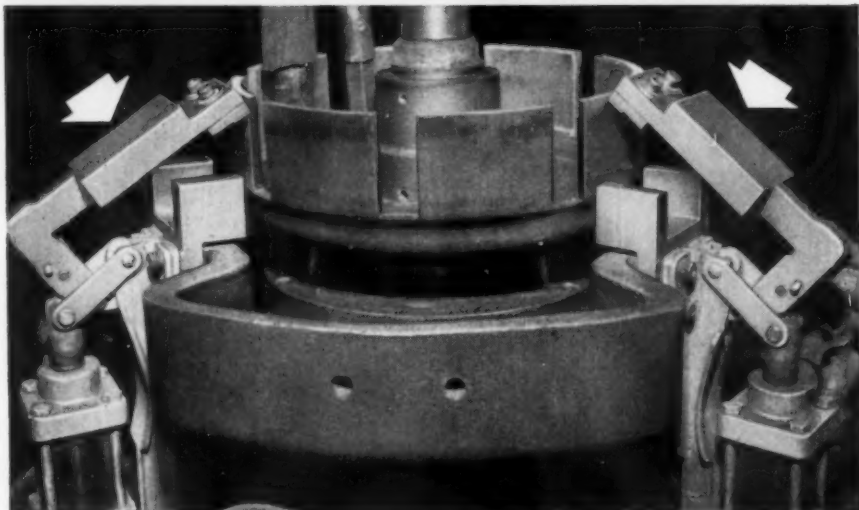
1832 N. Stevenson Highway

Royal Oak 3, Michigan

For details on how EDM machining of cavity type dies can prove profitable for you, write for Bulletin P7-1257

ELOX keeps you ahead
of competition. All forms of
Die Making • Form Grinding
and Tool Sharpening

BIG--for big jobs



NEVER SEND A BOY—here's the Knu-Vise clamp AO-200.

LAPEER CLAMPS FOR ARC WELDING

In the plant of a midwestern automotive parts manufacturer, air operated Knu-Vise clamps are an important part of a work holding fixture for arc welding. Shown is the operation where center hubs are welded into the high clutch splitter housing for automatic truck transmissions.

No job for a panty-waist, the husky Lapeer clamps have to grab securely—hold rigidly—let go instantly. They are part of a family of more than 150 models of clamps and pliers designed to do a tremendous number of holding jobs. Some are air-operated, others hand operated. All of them do workhorse jobs in industry holding big parts, small parts, unwieldy parts. Write today for more information.

Manufacturers of over 150 models of manually and air-operated clamps and pliers

**KNU-VISE
PRODUCTS**

**3052 DAVISON ROAD
LAPEER, MICHIGAN**

LAPEER MANUFACTURING CO.

WESTERN DIV.: ART LEWIS PRODUCTION EQUIP. CO.
419 Magnolia Street, Glendale, California

CANADIAN DIV.: HIGGINSON EQUIP. SALES LTD.
1131 Pettit Road, Burlington, Ontario

See The Lapeer Exhibit Booth No. 833 A.S.T.E. Show May 1-8

Use postpaid card. Circle No. 241

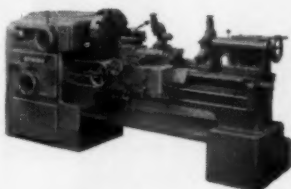
MACHINE and TOOL BLUE BOOK

**FIRST QUALITY NEW MACHINERY ...
BEST VALUES IN THE U. S. A.**

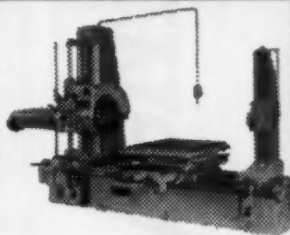
**LIBERAL TERMS
RENTAL PLANS
3 YEAR GUARANTEE**



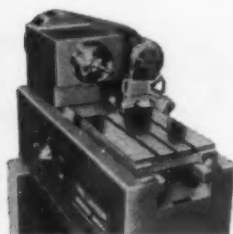
IMPERIAL LATHES
Model PS — 34/61
SLIDING BED GAP LATHE
Swing over ways 34";
Swing in gap 61"
Flame Hardened and
Ground Bed Ways
\$12,990



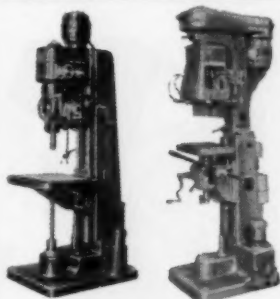
SCHAEERER LATHES



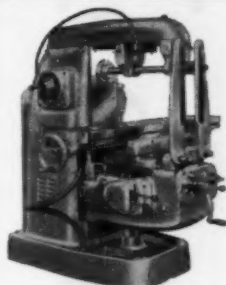
IMPERIAL
HORIZONTAL, BORING,
DRILLING &
MILLING MACHINES
FROM \$9,988 TO \$47,880



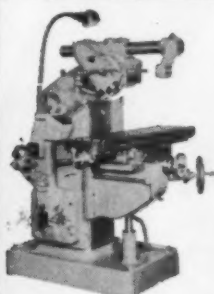
LARSON
Fine Precision Boring Machine
(Hydraulic Feed)
\$2,495



IMPERIAL
DRILLING MACHINES



WESTBURY
UNIVERSAL DIAL-TYPE
HORIZONTAL
MILLING MACHINES
FROM \$3,390 TO \$5,980



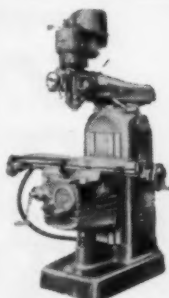
ABENE
COMBINED
VERTICAL-HORIZONTAL
MILLING MACHINES
\$3,990



HAAS
UNIVERSAL TOOL &
CUTTER GRINDER
\$1,195



IMPERIAL
OPTICAL JIG BORER



WESTBURY 15
VERTICAL TURRET
MILLING MACHINE
\$2,095

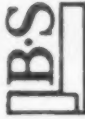
AARON MACHINERY CO., Inc.

Dept. B 45 CROSBY ST., N. Y. 12, • WA 5-8300

BRANCHES AT:

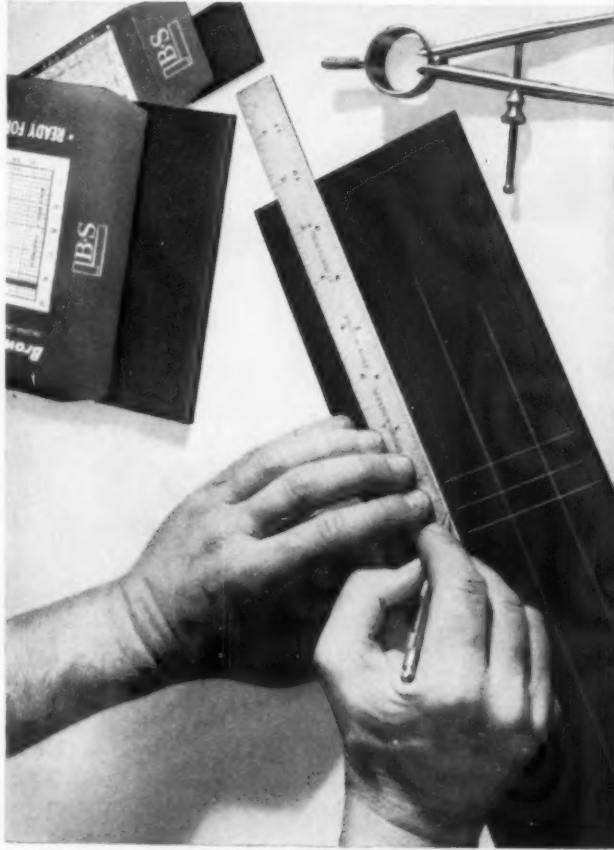
BUFFALO, N. Y. RICHMOND, CAL.
MINEOLA, N. Y. SAN DIEGO, CAL.
LOS ANGELES, CAL. HOUSTON, TEXAS

Precision Tool News



No. 5

REPORTING NEW DEVELOPMENTS AT BROWN & SHARPE'S PRECISION CENTER



Announcing New B & S Dial Bore & Dial Snap Gage Lines

Brown & Sharpe Dial Bore Gages quickly determine to .0001" whether bore diameters are within tolerance ... disclose bell-mouth, out-of-round, barrel-shaped and other bore conditions. Frictionless action provides high repetitive readings.

Seven sizes cover from $\frac{1}{8}$ " to 13", with no spacers or shims required. Fixed-pin equalizers assure positive centralizing in hole; handles are insulated against hand heat; and an

"Ready Mark" Flat Stock is Pre-Colored

in carrying over 100 points available.

"Ready Mark" Flat Stock is Pre-Colored for Immediate Layout


Brown & Sharpe now offers a complete line of "Ready Mark" precision ground tool steel that comes to you coated with a smooth blue finish, all ready for scribing. The blue finish prevents rust, eliminating the need for "greased" stock; serves as permanent identification. This pre-colored stock saves about 5-minutes degreasing, bluing and drying time each time it is used.



B & S Direct Reading Micrometer

Speeds Measurements

Numbers appearing in plastic windows on the revolving thimble of Brown & Sharpe's new D. R. M. 200 micrometer shorten reading time by indicating .001ths directly in units of .005ths. Individual .001ths and .0005ths are then read easily from the thimble—.0001ths from widely-spaced Vernier graduations on the non-revolving sleeve. There is no possibility of "twenty-five thousandths" errors.

PROGRESS IN PRECISION  FOR 125 YEARS

Brown & Sharpe

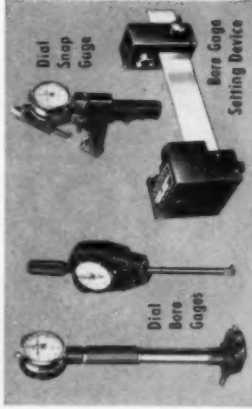
PRECISION TOOLS AND GAGES • MILLING, GRINDING AND SCREW MACHINES • CUTTERS • MACHINE TOOL ACCESSORIES • GEAR, VANE AND CENTRIFUGAL PUMPS

Use postpaid card. Circle No. 243

IN CONTACT WITH THE WORK

points available.

Easy-to-use B&S Bore Gage Setting Devices are perfect companions that simplify setting of the Dial Bore Gages . . . eliminate the need for inventories of ring gages. B&S Dial Snap Gages, offering similar advantages of speed and accuracy for checking outside diameters of 0" to 4", are also available.



Ask Your B & S Distributor to show you these tools

Brown & Sharpe precision tools are available to you quickly, at factory prices, through your nearby B&S Distributor. Call on him for experienced help in any of your precision tool needs. Brown & Sharpe Mfg. Co., Providence 1, R. I.

B&S

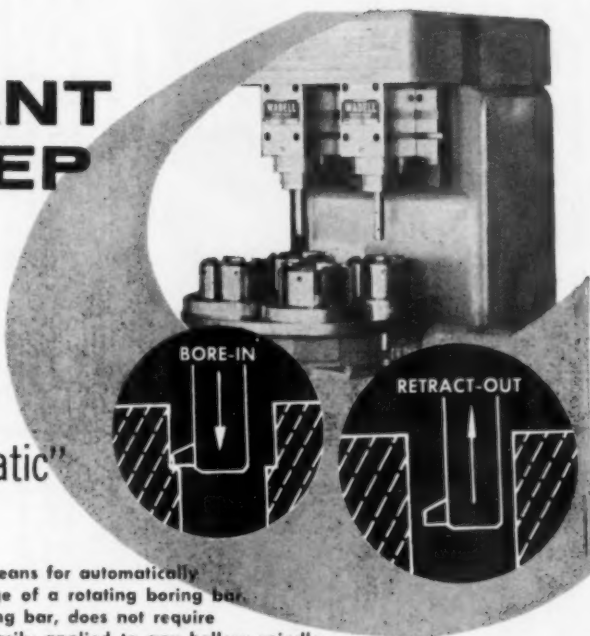


BOOTH 824

A GIANT STEP

in
precision
boring

The
"Retrakto-Matic"
Boring Bar



A simple, inexpensive, means for automatically retracting the cutting edge of a rotating boring bar. Looks like a regular boring bar, does not require any additional space. Easily applied to any hollow spindle.

INCREASES PRODUCTION

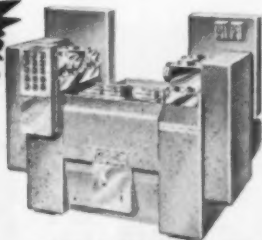
When it is possible to rapid traverse return through the bore, cycle times can be decreased as much as 40%.

MINIMIZE OUT-OF-ROUNDNESS

Boring out on the return stroke causes out of roundness. This condition is caused by the reversal of direction in any machine slide.

INCREASE CUTTING TOOL LIFE

Though a drag-line may be permissible, the cutting edge suffers when dragged across the surface.



Horizontal Boring Machine

The new additions to the Wadell line are the Versatile Model HBM Horizontal Precision Boring Machines. These machines have electro-hydraulic feeds, conform to J.I.C. specifications and include many new design features. Table stroke is 15 inches.



WADELL EQUIPMENT CO.

159 TERMINAL AVE., CLARK, NEW JERSEY

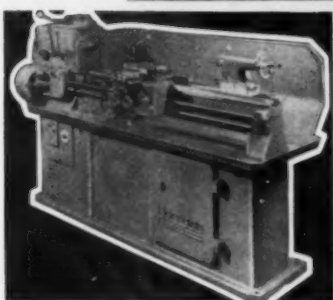
See the "Retrakto-matic", the new Horizontal Precision Boring Machine and the exclusive VBM at the Wadell Booth No. 1816, YOUR CENTER FOR HIGH PRODUCTION MACHINE TOOLS.

Use postpaid card. Circle No. 244

MACHINE and TOOL BLUE BOOK

Harrison LATHES

**STOP at booth 1470
ASTE SHOW and see
these machines
in operation**



11" HYDRAULIC COPYING LATHE.

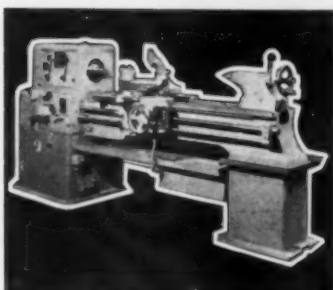
Yes, you get 2 for 1! The turn of a switch changes this lathe from duplicating to standard operations . . . without removal or addition of parts. 16 spindle speeds from 45—2000 RPM. 3 HP motor. Instant lever control. **EASY TO OPERATE.** Here is the best Copy Lathe buy on the market! Price only **\$3,100.**

11" GEARED HEAD PRECISION GAP LATHE.

Installation of this lathe will save the costs of larger, heavier, space-consuming machines. Note: 18 1/4" swing in gap permits turning of large diameter castings and plates. Price only **\$1,750.**

16" GEARED HEAD GAP LATHE.

Large 3-1/16" hole through the spindle! Swings 25" through the gap. Provides greater capacity and flexibility at low cost. Available in 12 or 24 speeds from 32—1000 RPM. Price only **\$4,100.** Prices include motors, controls and many extras. Investigate!



FLASH! . . . TWO NEW HARRISON LATHES . . .

13" Geared Head and 16" Hydraulic Copying Lathe . . . will be introduced for the first time at the ASTE Show. Be Sure to see them or write **TODAY** for information and prices.

Sales service and parts available through authorized distributors.

STANLEY SHEPPARD

U. S. REPRESENTATIVES

30 CHURCH ST.

NEW YORK 7, N.Y.

Use postpaid card. Circle No. 245

SYNTRON can supply

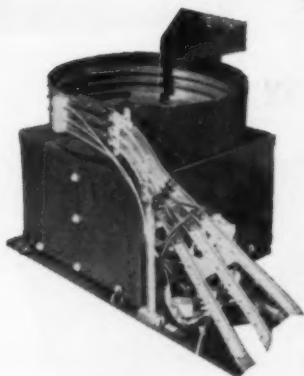
either

Complete Vibratory

PARTS FEEDERS

with oriented bowl,
discharge track and
escapement devices

Send sample parts and SYNTRON engineers will work out the orientation of bowl, and design discharge track with integral escapement for selective feeding of parts according to specifications.



See SYNTRON'S Display
at the ASTE Tool Show
Booth 2147 South Hall

or

You can develop your own Automation
with . . . **SYNTRON**
Vibrating Drive Units
and/or
Bowls

SYNTRON makes it easy for those who have the facilities and prefer to work out their own feeder bowl orientation and discharge track. The vibrating base units and plain bowls can be purchased separately or collectively.

Write for complete information.

Equipment of Proven Dependable Quality

MW 1158

**Write for FREE
Catalogue Data**

SYNTRON COMPANY

300 Lexington Ave.

Homer City, Pa.

Use postpaid card. Circle No. 246

MACHINE and TOOL BLUE BOOK

SIMONDS
ABRASIVE CO.

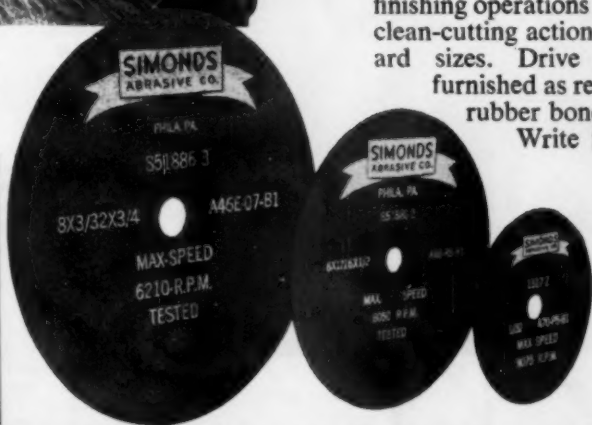
CUT-OFF WHEELS

for **FAST,**
CLEAN-CUTTING
on **ALL** materials

Resinoid bonded to stand up to the rigors of high-speed grinding! Rubber bonded for wet or dry cutting under severe-stress and strain! Simonds cut-off wheels, in either bond, save time, money and materials with speedy, accurate cutting. You can also eliminate finishing operations due to their clean-cutting action. All standard sizes. Drive pin holes furnished as required with rubber bonded wheels.

Write for bulletin
ESA 163.

For all metals, including hard alloys, and non-metals except wood.



CALL YOUR SIMONDS
DISTRIBUTOR



Proven products

Dependable know-how

Quick supply

SIMONDS ABRASIVE COMPANY

Tecumseh & Vreloy Sts., Philadelphia 37, Pa.

Division of Simonds Saw and Steel Co.

BRANCHES: Chicago • Detroit • Los Angeles • Philadelphia
Portland, Ore. • San Francisco • Shreveport

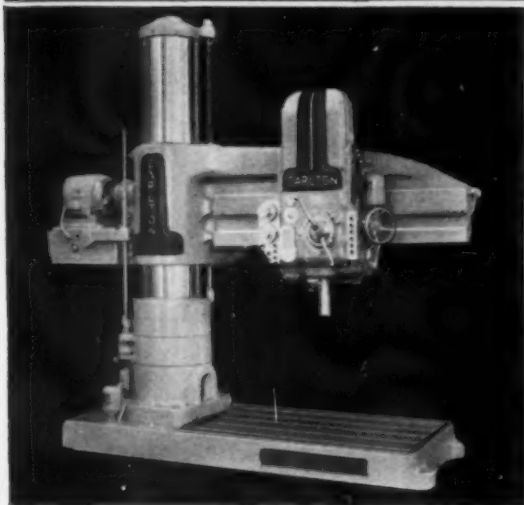
Use postpaid card. Circle No. 247

Model	Column diameters	Arm lengths	Speeds		Feeds		Motor recommended
			No.	Range	No.	Range	
0A	9"	3'-4"	8	25 to 1	4	.004-.020	3-hp
1A	9" 11"	3'-4" 3'-4'-5"	12	25 to 1	6	.006-.025	5-hp 5 or 7½-hp
3A	13" 15" 17"	4'-5" 4'-5'-6" 5'-6'-7"	26	100 to 1	18	.004-.125*	7½, 10, 15, 20 or 25-hp
4A	19"	6'-7'-8"	36	100 to 1	18	.004-.125*	15 to 40-hp
5A	22" 26"	7' to 10' 8' to 12'	36	100 to 1	18	.004-.125*	20 to 40-hp†

*8, 11½, 14 and 18 threads per inch are standard, with various other combinations available.
†Driving motor larger than 40 hp can be used if desired.

Carlton... the modern design radial drill

0A 1A 3A 4A 5A



Only at Carlton can you take your choice of

- 5 different models of radial drills
- Column diameters from 9" to 26"; arm lengths from 3-ft. to 12-ft.
- 5 different types of speed-feed controls (3A, 4A and 5A models)

For the utmost in versatility, you can choose the Carlton Programming System that lets you pre-set speeds and feeds for a complete drilling sequence of 20 or more operations.

For production operations involving fewer and less complex drilling sequences you can select from among three speed-feed controls that help make the machine more productive: Pre-select, Power range Pre-select and Partial Pre-select.

And in manual control, Carlton's simplified pushbutton control head is the most modern in design and easiest to operate.

There's no compromising at Carlton... where you select the radial drill that fits your requirements exactly. Write today for bulletins describing the sizes you need. The Carlton Machine Tool Co., Cincinnati 25, Ohio.

Carlton *Specialists in radial drills*

Use postpaid card. Circle No. 248



PROGRESS REPORT SOLID CARBIDE TOOLS

CASE HISTORY #27 MAJOR INDUSTRIAL MANUFACTURER



END MILL
Series 1604
1/4" RH Spiral

OPERATION Milling 1/4" slot to .045" depth
MATERIAL Cast Iron
SPEED-FEED 8,000 r.p.m.
PRODUCTION Atrax solid carbide end mills operated 20 hours continuously with no apparent wear.

CASE HISTORY #40 EASTERN AIRCRAFT MANUFACTURER



**E 141
BUR**
Extra Coarse

OPERATION Burring piece parts
MATERIAL Aluminum
SPEED-FEED 20,000 r.p.m.
PRODUCTION One Atrax solid carbide bur produced same number of parts as 48 HSS burs.

CASE HISTORY #49 EASTERN ELECTRONICS MANUFACTURER



#53 DRILL
Series 1815

OPERATION Drilling
MATERIAL Glass base melamine
SPEED-FEED Standard speeds, hand fed
PRODUCTION One Atrax solid carbide drill outlasted 1200 HSS drills.



SEND TODAY for 96 page "STANDARD
REFERENCE" on Carbide Tooling!

THE ATRAX COMPANY

Newington 11, Connecticut





DRILLING BOTTLENECKS?

NOT with **ACCURATE**



Drill Bushings in your jigs...

You can reduce costly production delays — specify **ABC Accurate Drill Jig Bushings**.

SAME DAY Shipments — Standard ABC drill jig bushings from our **FACTORY** and conveniently located **WAREHOUSING DISTRIBUTORS**.

SPECIAL sizes get top priority **SERVICE**.

CAREFUL manufacture — from **WEAR-RESISTANT**, chrome alloy bearing steel.

ABC drill jig bushings meet the most rigid standards of **PRECISION** and **DURABILITY**.

Write or phone for a catalog and price list today!



ACCURATE BUSHING CO.

ASA STANDARD BUSHINGS • PRECISION PARTS • LIFT SWING DRILLING FIXTURES

444 North Avenue, Garwood, New Jersey

*Stop at Booth 720
at the ASTE Tool Show
and learn more about...*

cutting tools for cutting costs

THE specially-developed "Hi-Lo" tooth design of M&M Triple Chip cut-off blades and slitting saws distributes cutting strain, permitting higher speeds and heavier feeds, while greatly prolonging tool life. Material is cut square, burrless, with milled finish.

And M&M's factory repair, resharpening and resegmenting service, the fastest in the industry, helps you avoid excessive inventories... minimizes costly downtime.

Your local M&M dealer stocks the complete line of M&M cutting tools and is always at your service to help solve tough or unusual sawing problems. Call him today.

FREE — Send today for your copy of M&M's Circular Sawing Handbook, a pocket-sized guide to sawing operations.



Quality

Service

Availability



Cutting Tool Manufacturing Division
Cleveland 17, Ohio



PET



Wodack



Remington-Mall



Skil

32 GREAT MAKES

with ONE big feature in common

-JACOBS CHUCKS



Chicago Pneumatic



Buckeye



Ram



Wen



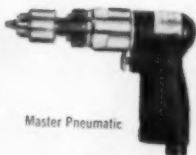
Arg



Milwaukee



Pioneer



Master Pneumatic



Sioux



Millers Falls



Porter Cable



Sunbeam



McGraw-Edison



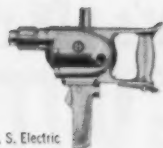
Ward's Pow-Kraft



Black & Decker



Gibraltar



U. S. Electric



Ingersoll Rand



Stanley



Cummins



Thor



Rotor



Thor Speedway



Dormeyer



Electro Engineering



Sears' Craftsman



Keller



Cleco



Jacobs and your industrial supply distributor are ready to deliver the chucks you need and the service you deserve. First in chucks . . . first in service.

The Jacobs Manufacturing Company
West Hartford, Connecticut

Jacobs
CHUCKS

Use postpaid card. Circle No. 253

It's what's **IN** these wheels That brings **OUT** big, new time-savings

(Abrasive plus **RUBBER!**)

A COMPLETELY NEW SLANT
ON ABRASIVE APPLICATIONS



Multi-Use Brightboy gives you a *definitely different working action*, with *abrasive and rubber functioning simultaneously*. Brightboy often reduces **BURRING, CLEANING, FINISHING and POLISHING** to a single step, time saving operation. A Brightboy finish frequently constitutes the final polish.



Write for **FREE SAMPLE**
BRIGHTBOY HAND PIECE for
quick-job cleaning

Readily-available Brightboy **STOCK** numbers are **JOB-MATCHED** not only to your usual finishing work, but also to special finishing, often replacing special-order compounds. Wide selection of Silicon Carbide and Aluminum Oxide grains. Each in grades from extra fine to extra coarse, in soft, firm and tough rubber binders.

Made in WHEELS, STICKS, RODS & BLOCKS for machine and manual applications. Ask your dealer to recommend the Brightboy numbers for your needs, and for the Brightboy catalog listing applications and machine speeds. Ask him or write us for "Notes From The Brightboy Service Engineer," an informal news letter describing Brightboy applications reported by our service engineers.

BRIGHTBOY INDUSTRIAL DIVISION
WELDON ROBERTS RUBBER CO.

95 North 13th Street • Newark 7, N.J.

America's Pioneer Manufacturer of Rubber-Bonded Abrasives



Use postpaid card. Circle No. 254

AUTOMATIC COMPENSATION FOR MISALIGNMENT WITH EMPIRE FLOATING TOOL HOLDERS AND TAP HOLDERS

Check These Exclusive Empire Floating Tool Holder Features:

- Automatically compensates for both angular and parallel misalignment.
- Eliminates bell mouthed and over-sized holes—permits extremely close tolerance work.
- Free and easy movement . . . tool holder sleeve and shank float independently of each other.
- Amount of float is infinitely adjustable.
- Smoother running . . . moving parts ride on rollers.
- Minimum of maintenance . . . holder has only five parts.

TOOL HOLDER



TAP HOLDER



Standard equipment with leading Machine Tool Manufacturers. Tool Holders and Tap Holders are available with either straight or tapered shanks.

Check These Exclusive Empire Floating Tap Holder Features:

- Automatically corrects parallel and angular misalignment.
- Designed to prevent freezing under tension—taps float in and out.
- Wide range of float—simple adjustment lock-nut provides accurate control of degree of float.
- No springs or pivot members to restrict float.
- Floatation feature makes it easier to hold close tolerances.

EMPIRE TOOL COMPANY
8780 GRINNELL AVENUE • DETROIT 13, MICHIGAN

RIGHT R and LEFT L TOOLS

AN EVER GROWING FAMILY!

Swing Tool Attachment

NEW

Recessing Tool

Heating Drill Holders

Knurling Tool

On and Off Center Drilling Attachment

NEW

Tap and Die Holders

NEW

Tool Slide Knurling Tool

NEW

Cross Slide Knurling Tool

NEW

Tool Holders for Multi-Spindle Automatics

NEW

Knurling Attachment

Roller Backrests

Carbide Backrests

Backrest Holder for Turret

Cut Off Blade Holders

Swing Tool

NEW

Releasing Die Holders for Auzern Dies

Revolving Stock Stops

Universal Tool Post

NEW

Famous R and L Turning Tool replaces an assortment of 14 tools!

R and L TOOLS
1825 BRISTOL ST., PHILADELPHIA 40, PA.

BB-4,

☐ Send me new catalog.
☐ Have your local distributor demonstrate tools in our plant.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Write for NEW catalog

RIGHT R and LEFT L TOOLS

1825 BRISTOL STREET - PHILADELPHIA 40, PA.



... See  **ADCOCK and SHIPLEY**

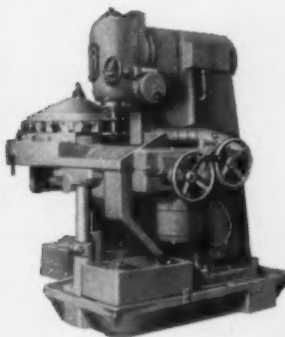
Mill 30 IPM With Two 3" Wide High Speed Steel High-Rake Cutters

... at booth
1470

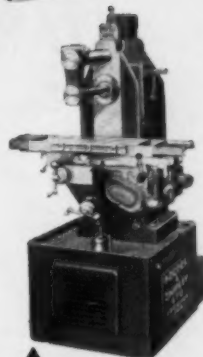
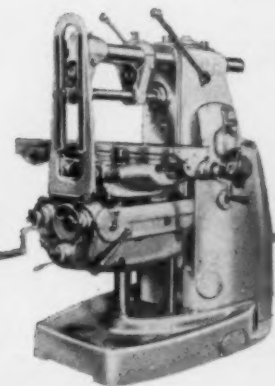
ASTE SHOW

Yes, stop and see the new Adcock & Shipley powerful heavy duty No. 4HG Milling Machine **under power** . . . in a **straddle milling operation** using two high rake cutters, each about 3-inches wide of high speed steel, milling steel at 30-inches per minute feed rates!

Actually 7 Adcock & Shipley machines will be on display and operating **under power** at the ASTE show. See them all . . . you'll be glad you did.



▲
Adcock & Shipley No. 2 VR Continuous Milling Machine for high production of components which require to be straddle milled, slotted, face milled, etc.



▲
Adcock & Shipley No. 1AJ Automatic Feed Milling Machine. Available in 24 different types.

▲
Adcock & Shipley No. 2JUR—Universal Milling Machine. Here's another machine to be demonstrated under power. This is Model 2JUR and will perform a roll milling demonstration on steel at a feed rate of 15" per minute.

Write today for catalogs and prices. No obligation.

Sales service and parts available through authorized distributors.

FLASH! See Adcock and Shipley Model 'O' Automatic Cycle Miller . . . High Speed Milling in Steel . . . Floor-to-Floor Operation of 3½ SEC-ONDS!

STANLEY SHEPPARD

U. S. REPRESENTATIVES

30 CHURCH ST.

NEW YORK 7, N.Y.

Use postpaid card. Circle No. 222



are
STANDARD
at Somma

Now plain cut-off, cut-off and chamfer tools and form tool blanks for B&S and Davenport machines made from T-5 High Cobalt H.S.S. have been added to Somma's long list of standard form tools.

The high cobalt content of T-5 steel provides higher red hardness which assures 3 to 10 times longer tool life and the high vanadium content greatly increases abrasive wear resistance.

Write for complete catalog and name of distributor in your area.

Somma TOOL CO., INC.

121 Scott Road, Waterbury, Conn.

West Coast Warehouse:
576 N. Prairie, Hawthorne, Cal.
Use postpaid card. Circle No. 258

District Managers MACHINE and TOOL BLUE BOOK

EASTERN DIVISION

Dan E. Reardon, V.P. in charge
c/o Hitchcock Publishing Co.
55 West 42nd Street
New York 36, N.Y.
Telephone: LAcawanna 4-4528

CONNECTICUT

Dan E. Reardon, V.P.
Box No. 1, South Glastenbury, Conn.
Telephone: MEdford 3-7083

NEW YORK, N.J., MD., D. of C., EASTERN PA., DELA.

Raymond J. Sietsema
c/o Hitchcock Publishing Co.
55 West 42nd Street
New York 36, N.Y.
Telephone: LAcawanna 4-4528
Home tel: (Cedar Grove, N.J.) Center 9-4384

MAINE, N.H., VERMONT, MASS., R.I., LONG ISLAND, N.Y.

Donald J. Leverich
49 Standish Rd.
Stamford, Conn.
Telephone: Davis 3-6156

CENTRAL DIVISION

SOUTHWESTERN OHIO, INDIANA, KENTUCKY

Henry J. Smith, V.P. in charge
c/o Hitchcock Publishing Co.
222 East Willow Avenue
Wheaton, Illinois
Telephone: WHeaton 8-3400

MICHIGAN, NORTHERN IND., NORTHWESTERN OHIO

William E. Jacobs
18055 James Couzens Highway
Detroit 35, Michigan
Telephone: Diamond 1-9525

ILLINOIS, MISSOURI, IOWA, WISCONSIN, MINNESOTA, UPPER PENINSULA of MICH., & SOUTH DAKOTA

Robert G. Bolinder
c/o Hitchcock Publishing Co.
222 East Willow Avenue
Wheaton, Illinois
Telephone: WHeaton 8-3400

WESTERN NEW YORK STATE, WESTERN PENNA., EASTERN OHIO

Ralph E. Helfrick
1507 Edgefield Road
Cleveland 24, Ohio
Telephone: Hillecrest 2-0189

WESTERN DIVISION

CALIFORNIA, ARIZONA

Keith M. Evans
3723 Wilshire Boulevard
Los Angeles 5, California
Telephone: DUnkirk 8-2981
and
593 Market St. (Room 816)
San Francisco 5, California
Telephone: YUkon 2-4286

OREGON, WASHINGTON

Lloyd Thorpe
212 General Insurance Building
Seattle 5, Washington
Telephone: MEIrose 3-4242

HITCHCOCK PUBLISHING CO.

• Telephone WH 8-3400 •
Wheaton, Ill.

FIRST CLASS
PERMIT NO. 272
WHEATON, ILLINOIS

BUSINESS REPLY CARD

No Postage Stamp Necessary If Mailed in the U.S.A.

3c POSTAGE WILL BE PAID BY

MACHINE and TOOL BLUE BOOK

READERS' SERVICE DIVISION

WHEATON, ILLINOIS



FIRST CLASS
PERMIT NO. 272
WHEATON, ILLINOIS

BUSINESS REPLY CARD

No Postage Stamp Necessary If Mailed in the U.S.A.

4c POSTAGE WILL BE PAID BY

MACHINE and TOOL BLUE BOOK

READERS' SERVICE DIVISION

WHEATON, ILLINOIS



For free information . . . use these postage-free Action Cards

New Products					circle key number				
81	91	101	111	121	131	141	151	161	171
82	92	102	112	122	132	142	152	162	172
83	93	103	113	123	133	143	153	163	173
84	94	104	114	124	134	144	154	164	174
85	95	105	115	125	135	145	155	165	175
86	96	106	116	126	136	146	156	166	176
87	97	107	117	127	137	147	157	167	177
88	98	108	118	128	138	148	158	168	178
89	99	109	119	129	139	149	159	169	179
90	100	110	120	130	140	150	160	170	180

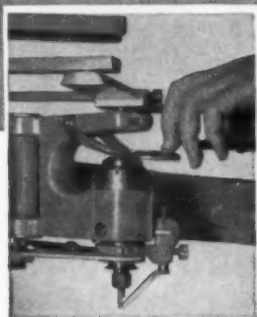
Product Mfd.

For free information . . . use these postage-free Action Cards

Product Mfd.

GREEN ENGRAVERS

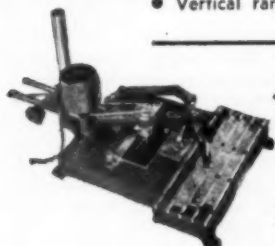
are fast!



- Spindle speeds up to 26,000 rpm to engrave or for machining modern materials
- Fastest possible copy set-up
- Greatest ease and speed of adjustments
- Cutter grinders, rotary tables, master letters, compound slides, name plate blanks and all required accessories

MODEL D2 HEAVY-DUTY 2-DIMENSIONAL ▲

- 575 pounds — rigid, sturdy, precise
- Vertical adjustment of copy table automatic with Pantograph
- Unobstructed on three sides to take large work
- Micrometer adjustment for depth of cut
- Ball-bearing construction throughout — super-precision ball bearings in spindle
- Ratios 2 to 1 to infinity — master copy area 26" x 10"
- Vertical range over 10 inches



◀ MODEL 106 PORTABLE BENCH MODEL 2- OR 3-DIMENSIONAL

- 40 pounds of unbeatable speed and accuracy at a reasonable price
- Perfect for all machining applications within its range
- Ball-bearing spindle has three speeds up to 14,000 rpm
- 5 positive, accurate pantograph ratios

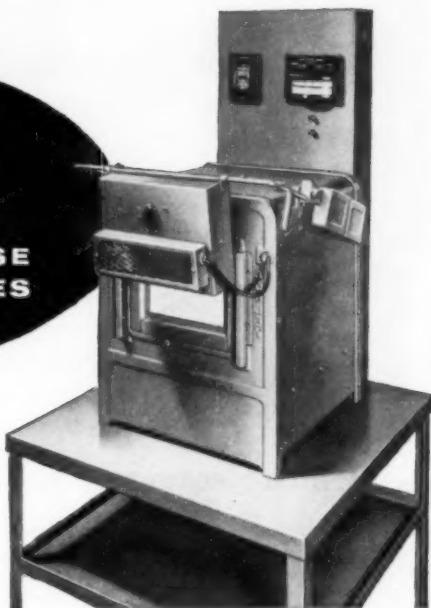
- One copy carrier (supplied) accepts all master sizes
- Height of pantograph and position of cutter are continuously adjustable
- Work up to 10" by any width
- Taper shank cutters



For complete information, write to
GREEN INSTRUMENT CO., INC.

386 PUTNAM AVENUE, CAMBRIDGE, MASS.

Visit us at Booth 1065 at the ASTE Show
Use postpaid card. Circle No. 259



- Easily installed anywhere with simple wire connections.
- Embedded type elements for maximum efficiency and ready replacement.
- Easily operated with automatic temperature control.
- Two types—to operate at 1850° F and 2,000° F.

HEAT TREAT SMALL PARTS, TOOLS, DIES, ETC. . . IN YOUR OWN PLANT.

These small electric furnaces are designed for general heat treating, hardening and tempering of small parts. Their uses include heat treatment of aluminum, copper and beryllium. Cooley embedded elements have been employed in high temperature furnaces for over twenty years with outstanding success. Cooley furnaces are easy to operate—at high or low temperatures—without experienced heat treaters. (There are no fumes or odors—no ventilating necessary.)

Quick, correct and easy installation is provided by the Cooley Control Panel (optional equipment) which makes the complete assembly a package unit. A proportioning type of control pyrometer is recommended for maximum accuracy and to accomplish low temperature tempering and uniformly controlled temperatures. All units are completely assembled and tested at factory.

Write for new catalog of electric furnaces and ovens.

MODEL	SIZE—INSIDE			SIZE—OVERALL			WATTS @ 230V—1 ϕ	MAX. TEMP. °F
	W	H	L	W	H	L		
MH-3.....	8	6	14	21	25	25	3400	1850
MH-4.....	10	6	18	23	25	29	4500	1850
VH-3.....	8	6	14	21	25	25	3400	1850
VH-4.....	10	6	18	23	25	29	4500	1850
VH-4B.....	10	8	18	23	27	29	4800	1850
VK-6.....	8	6	14	25	26	25	4650	2000
VK-7.....	10	6	18	27	34	36	6500	2000

"M" Models—Hinged Door. "V" Models—Vertically Sliding Door.

Proportioning Pyrometers (Brown Pulse Pyrovane and Wheelco Model 293) and Non-Proportioning Pyrometers (Brown Pyrovane and Wheelco Model 292) carried in stock. Any standard make or type available.

COOLEY ELECTRIC MANUFACTURING CORPORATION
36 SOUTH SHELBY STREET • INDIANAPOLIS 7, INDIANA

Use postpaid card. Circle No. 260

★★★★ FEATURE
"Eclipse IN ACTION"
 NOW SHOWING AT THE
ASTE TOOL SHOW
PHILADELPHIA • MAY 1-8

SEE: ECLIPSE "ground from the solid" precision end mills demonstrated on a milling machine right in the Eclipse booth, operating at maximum speeds and feeds on various types of material.

CO-STARRING

The complete line of ECLIPSE quality end cutting tools:

- ★ High Speed Steel Cutters
- ★ Multi-Diameter Cutters
- ★ Core Drills
- ★ Carbide Tipped Cutters
- ★ Inserted Blade Cutters
- ★ Back Spottacers

BOOTH 344 - THE ARENA

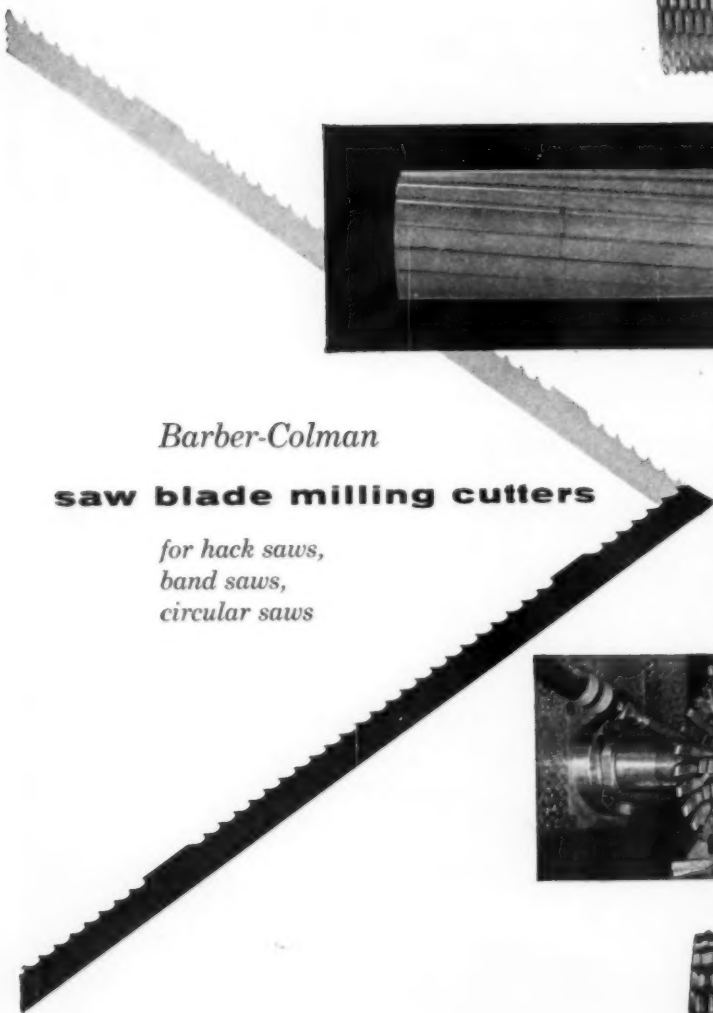
See You There!



ECLIPSE COUNTERBORE COMPANY

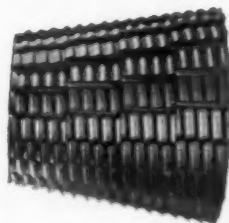
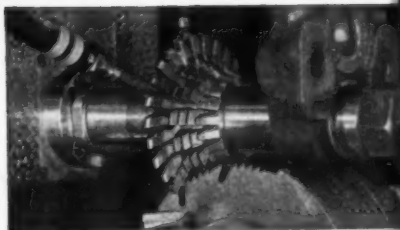
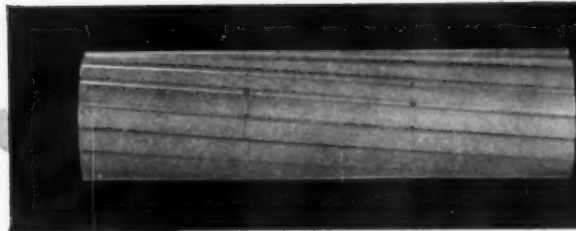
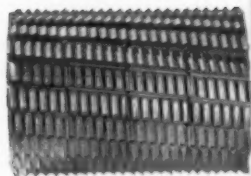
1600 BONNER AVE., DETROIT 20, MICHIGAN

Use postpaid card. Circle No. 261



Barber-Colman
saw blade milling cutters

*for hack saws,
band saws,
circular saws*



Reduce tool costs, save set-up, sharpening time

Barber-Colman Cutter Engineers have introduced new design features in special form-relieved cutters for milling saw blades which improve quality of the saws, and reduce production costs. These features also help to reduce initial tool cost.

Whenever possible, Barber-Colman Cutter Engineers recommend wide sections in these interlocking cutters. Wide sections often result in lower initial cutter cost than narrow sections. Since each section of the cutter must be sharpened in relation to the other sections, fewer sections result in less sharpening time. Handling and set-up time is also reduced. Our manufacturing facilities allow us to make these wide sections and still maintain the required accuracy.

Many saw blade cutters are furnished with helical flutes which produce a continuous shearing cut and distribute the cutting load evenly. Straight-fluted cutters can be made with the flutes staggered from section to section. For saw blades which require positive rake on the teeth, we can furnish tapered cutters with straight flutes which are staggered from section to section as shown in the example.

Cutter accuracy assures correct saw teeth

Since all saw blade teeth must be the same height so that each tooth will cut its share of the load, the cutters must produce sharp points of even height. Alternate tooth cutter design allows sharp points to be produced on the saw teeth. The relative position of the cutter teeth, both radially and axially, is held accurately from flute-to-flute. In addition, the cutter is accurate with respect to pitch and radial and axial runout. This inherent accuracy will be maintained throughout the life of the cutter with proper attention to accurate index sharpening.

The cutters shown here are typical examples of saw blade cutters. They can be furnished for hack saw, band saw or circular saw blades with either radial or rake teeth. Barber-Colman Engineers can design other types of special form-relieved cutters to solve your milling problems. Send blueprints of your part for analysis and recommendations.

See these cutters in BOOTH 1255



Barber-Colman saw blade cutters will be on display at the ASTE Show in Booth 1255. Be sure to see these improved design features, as well as other Barber-Colman cutter developments, including the New Mult-O Tools for transfer-type machining.

BARBER-COLMAN COMPANY

954 ROCK STREET • ROCKFORD, ILLINOIS

Hobs • Cutters • Reamers • Hobbing Machines • Hob Sharpening Machines



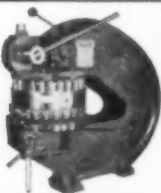
built to YOUR specifications

ROTEX

**fine
metalworking
equipment**



ROTEX MILLING MACHINES . . . Three models, Vertical Mill, Horizontal Mill, Semi-Automatic Production Mill. Independently driven vertical head attachment available for converting Horizontal Mill to Vertical Mill. Our line designed to fill that gap between Small Bench Mills and large expensive floor models.



ROTEX QUICK-CHANGE TURRET PRESSES . . . Seven Models, Hand and Power operated. Round punch and die sizes range from 1/32" to 1". Any odd shaped set within capacity of machine can be furnished. Wherever holes are to be punched in sheet material these machines have a place. Thousands are now in use. New applications are being found day by day. Used in such industries as Electronics, Aircraft, Radio and Television, Refrigeration, Air Conditioning, Sheet Metal, Atomic Research, Etc. How about your requirements?



ROTEX VALVES AND CYLINDERS . . . Air, Water Service, and low pressure hydraulic. 3 and 4 way valves, 1/2", 3/4", and 1 1/2". Any desired actuating attachments. Over 130 combinations. Cylinders 3/4", 1-1/4", 2", 3", 4" bores. Any desired length. Interchangeable mounting attachments. Valve-in-head clamp type cylinder, also single acting clamping cylinder. Three models of Position Production Tables. Hand and air operated.



ROTEX MINUTE BRAKE . . . a versatile tool for every shop. **RUGGED, DEPENDABLE and ECONOMICAL.** The main advantage found in this press brake is the variety of bending operations that can be performed with a small number of dies, also the ease of converting it into a small shear. The minute or less required to change blades makes this versatile machine especially valuable in model shops, experimental laboratories and production departments, or any place where quality is a major feature. With four and one-half tons of pressure, the brake can do any job that a standard press can do only on a miniature scale. Through its varied and valuable uses, the small cost of this machine can be written off in a very short time.

Every
ROTEX
product carries
a customer's
Seal of
Approval



Catalogues of all ROTEX products sent upon request.

ROTEX PUNCH CO.

First & Alvarado Streets San Leandro, Calif.

Use postpaid card. Circle No. 263

MACHINE and TOOL BLUE BOOK

NOW-

**For Keener, Longer Lasting
Cutting Edges, You Need These
*TOOL SHARPENING TWINS***

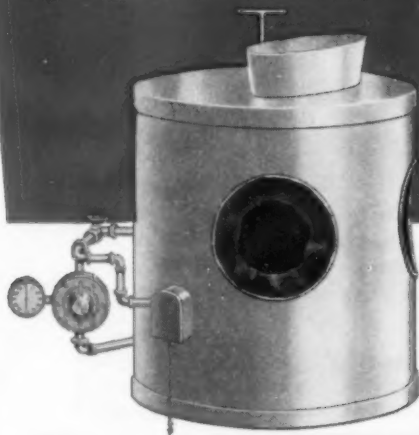
By



Liqui-Breez

WET BLAST HONER

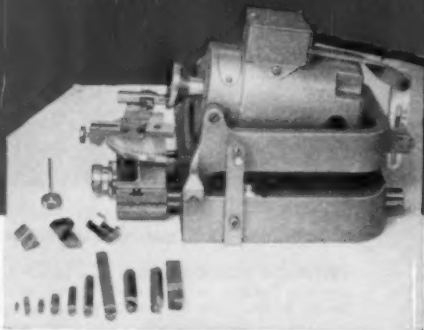
For ANY Tungsten Carbide
and High Speed Steel Cutters



- Increases Cutter Life 300% to 400% and More.
- Reduces Tool Resharpener and Machine-down Time.
- Accomplishes Greater Consistency, Uniform Finishes and Accuracy Between Resharpenings.
- Affords easy Detection of Fractures and Cracks in Carbide Cutters.

**TUNGSTEN CARBIDE
TOOL GRINDER**

For ALL
SINGLE POINT CUTTERS



- Grinds Tools of Any Angle—Right or Left Hand —All Faces and With Any Radii.
- Diamond Impregnated Grinding Wheel.
- Micromatic Feed.
- Ball Bearing Cross Feed with Automatic Gravity Take-Up.
- 110-volt, 60 cycle, single phase, 13000 RPM Universal Motor.
- Capacity Range—Accommodates Single-Point Tungsten-Carbide Cutters From $\frac{1}{8}$ " to $\frac{3}{8}$ " Shanks.

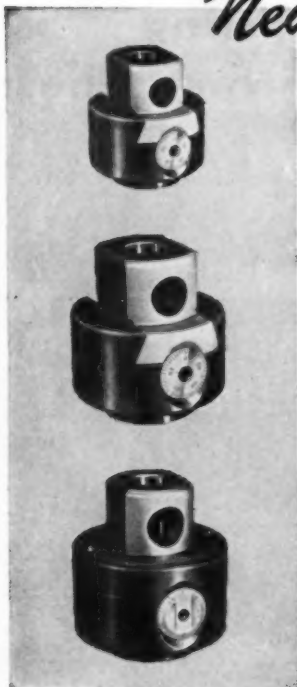
PROTECTED DISTRIBUTORSHIPS AVAILABLE



TOBIN-ARP MFG. CO.

6400 PENN AVE. S. • MINNEAPOLIS, MINN.

New from Criterion!



3 NEW BORING HEADS WITH THESE OUTSTANDING FEATURES

Round-body design
Cross-hole for greater range
Short - compact construction
Sizes — #102 has 2" diameter
 #103 has 3" diameter
Boring range — 1/16" to 8" and larger

NEW 3" DIAMETER MODEL #203 INCLUDES THESE ADDITIONAL FEATURES

Protective cap houses all moving parts
Friction lock dial face permits return
to zero setting.

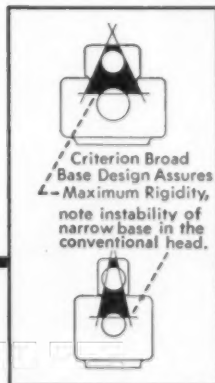
THESE NEW HEADS TAKE 1/2" or 3/4" SHANK BORING TOOLS AND BORING BARS

RUST-RESISTING BLACK AND SATIN-CHROME FINISH

Offset range — 1/2" in 2" dia. model
 3/4" in 3" dia. model
Complete line of high-speed and carbide
boring tools to fit all Criterion Heads
carried in stock.



CRITERION BORING HEADS are better because they
combine utility with simplicity of design — see
sketch to the right for one of many features.



Consult your Criterion Dealer or write for free literature.

Use postpaid card. Circle No. 265

MACHINE and TOOL BLUE BOOK



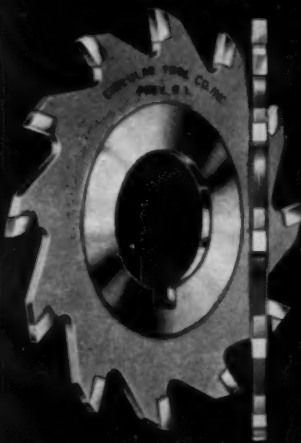
...Our Key To Your Quality In Extra Tough Cutting



Solid Tungsten Carbide

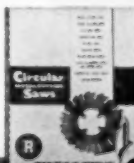
Shown 2 3/4" dia., .015" thick

Carbide Tipped



CIRCLE R precision underwrites your precision by holding within very close tolerances, where required — adding precise performance to such extraordinary cutting tools as these shown above. In automation, especially where cutting is extra tough, you get longer runs, less down time, fewer stoppages for re-sharpening. Consult your Circle R specialist.

BURBANK	INDIANAPOLIS	PHOENIX
CHICAGO	MILWAUKEE	PITTSBURGH
CLEVELAND	NEW YORK CITY	PROVIDENCE
DAYTON	PHILADELPHIA	ROCHESTER
DETROIT	MONTREAL	ST. LOUIS
HACKENSACK		WESTBURY, L. I.



SEND FOR CATALOG O

METAL SLITTING SAWS
COPPER SLITTING SAWS
SCREW SLOTTING SAWS
COMMUNICATOR SLOTTING SAWS
JEWELERS' SLOTTING SAWS
CUT OFF SAWS • CIRCULAR
KNIVES & ROTARY SHEAR
BLADES • CIRCOLOY STEEL
SAWS • SOLID & TIPPED
TUNGSTEN CARBIDE SAWS
COMBINED DRILLS & COUNT
ERSINKS • CENTER REAMERS

CIRCULAR TOOL CO., INC.

PROVIDENCE 5, RHODE ISLAND

Specialists in Circular Cutting Tools Since 1923

extra!

ALL ABOUT THE LATEST BENDING METHODS

Let Pedrick show you how the latest methods of bending pipe, tube and structural metal—on a job or production basis—can save you money.

For full information on Pedrick Production Benders, write PEDRICK TOOL AND MACHINE CO., 3640 N. Lawrence St., Phila. 40, Pa. Dept. 3.



FREE "PEDRICK LINE" BULLETIN.
WRITE TODAY.

PEDRICK

production benders



**SIX times the
PROFIT
with a
ONE
machine
investment**

"BUFFALO" UNIVERSAL IRON WORKER

With the UIW, you pay for only *one* machine — yet you actually get the production work of *six* machines. This versatile workhorse performs *all* these operations — without changing tools: cutting, punching, notching, shearing, slitting, coping, mitering. Handles angles, tees, channels, bars, flats and plates. Built to last a lifetime, with sturdy electrically-welded steel plate frame and 1-shot lube system. See how the "Buffalo" Universal Iron Worker will speed production and increase profits in *your* shop! Write for Bulletin 322-Q.



BUFFALO FORGE COMPANY

161 Mortimer Street • Buffalo, N. Y.

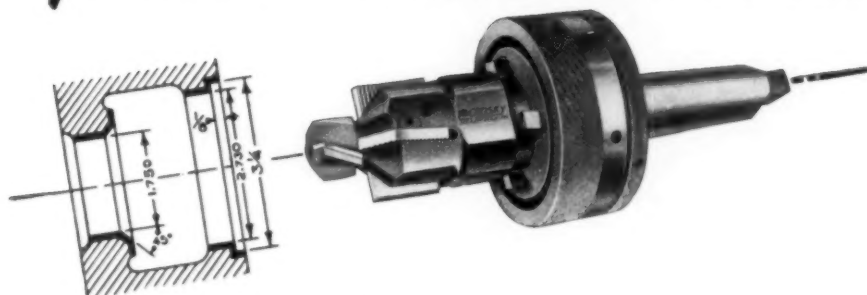
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING PUNCHING SHEARING BENDING



Use postpaid card. Circle No. 268

Cut Costs WITH **McCROSKY** *Special* PRODUCTION TOOLS



**do 3, 4, 5 or more operations at
the same time 1 tool—1 setup**

• Engineered specially to your work prints, McCrosky "Specials" combine related facing, boring, counter-boring and chamfering operations — perform them all simultaneously. This assures absolute concentricity and uniformity of finished pieces — eliminates stock-piling and re-handling between operations — speeds up production — reduces the amount of work in process — shortens deliveries — and produces other economies so great that they pay their way even on moderately short runs. Send your work prints to McCrosky, and write for a "Specials" bulletin. It gives complete details; illustrates nearly 50 typical examples.



McCROSKY

**TOOL
CORPORATION**
MEADVILLE, PA.

Engineering and Sales Representatives in the Principal Cities

Use postpaid card. Circle No. 269

MACHINE and TOOL BLUE BOOK

a sensitive, short or long run tool especially developed
for machining small parts to close tolerances

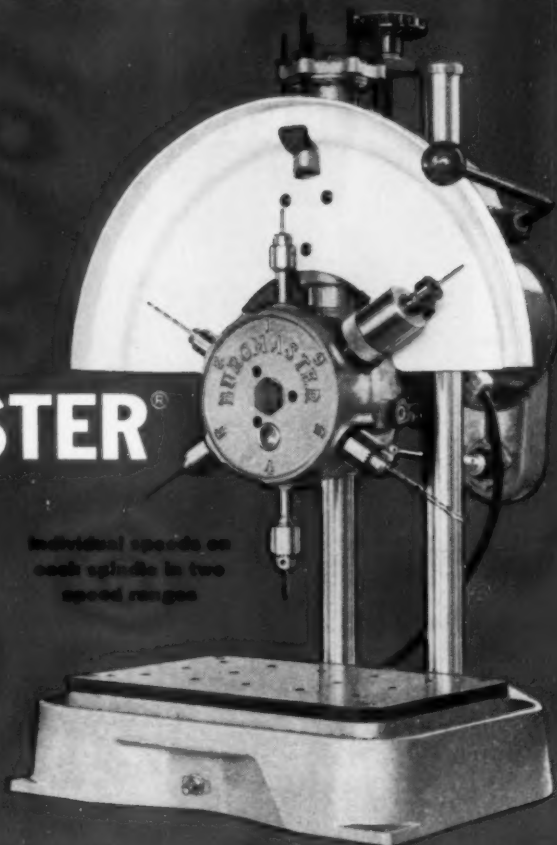
THE NEW BURGMAS[®]

Bench Model

Individual speeds on
each spindle in two
speed ranges

\$550⁰⁰

including motor and controls
less tooling shown



12-speed, 6-spindle, power-indexing Bench Model Turret Drill

Drilling, tapping, reaming, counterboring, countersinking, spot facing and numerous other second operations can be accomplished — with one operator — in one location — quickly and simply. The Burgmaster principle is basic. Each tool change is brought to the work. The need to carry or shove, then realign the work manually is eliminated. Time loss is cut, accuracy is increased, fixture costs are reduced.

SPECIFICATIONS: capacity, $\frac{3}{8}$ " in steel, $\frac{1}{4}$ " in aluminum; overall dimensions, height, 31 $\frac{1}{2}$ ", width, 17", depth, 20"; motor, $\frac{1}{4}$ hp, chuck to base clearance, 12"; maximum spindle travel, 2 $\frac{3}{8}$ "; center of spindle to column clearance, 5 $\frac{1}{8}$ "; geared head permits each spindle to operate at its own predetermined speed from 350 to 6200 rpm.



CALL YOUR DISTRIBUTOR

Phone, wire or write Dept. MT-4

BURGMAS CORPORATION

Small Tool Division,
Burg Tool Manufacturing Co., Inc.
13226 S. Figueroa St., Box 311, Gardena, Calif.
Phone: FAculy 1-3510

CHICAGO — Burgmaster Corp., 5329 Lincoln Ave., Chicago 25. Phone: LOngbeach 1-1178 • RIDGEWOOD, N. J. — Burgmaster Corp., 86 N. Maple Ave. Phone: GILbert 4-3002

Cuts Costs • Saves Space • Increases Production

World's largest manufacturer of turret drills

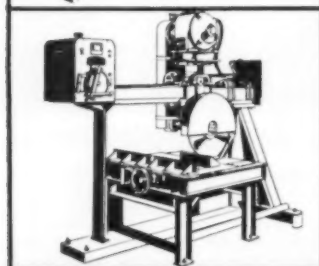
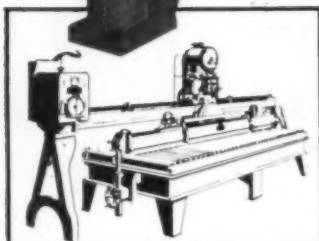
Use postpaid card. Circle No. 270

HIGH-SPEED SAW WITH CLAMP TABLE MAKES IRREGULAR SHAPE CUTS



WRITE FOR
FREE
CATALOG

LOW INVESTMENT SAW CUTS METAL FAST & CLEAN



Whether you're making straight cuts, odd angle cuts or irregular shapes such as turbine impeller blades, you'll find the Ty-Sa-Man 144 BD combination of speed and amazing accuracy will save you money. Table has positive air-driven clamps to hold material in any position. Other Ty-Sa-Man cut-off models from 10" to 58" cuts . . . long-cut saws for 4' to 60' cuts, with or without cross movement, for friction or abrasive sawing.

Ty-Sa-Man

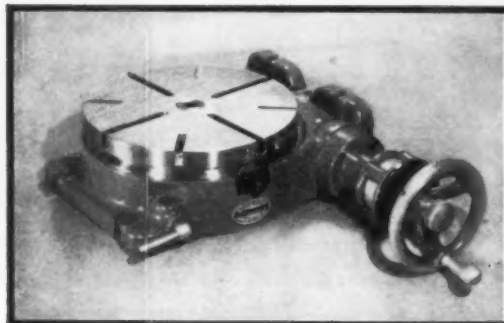
MACHINE COMPANY

800 WHITE AVENUE, KNOXVILLE, TENN.

Use postpaid card. Circle No. 271

MACHINE and TOOL BLUE BOOK

**For angular spacing jobs so precise
you could never handle them before**



No. 2 Moore 11-Inch Rotary Table, developed by the builder of the Jig Borer and Jig Grinder.

**A Rotary Table
accurate to
 ± 3 sec. in 360°
(USING CHART)**

**THE FOLLOWING ACCURACY
BUILT FOR SHOP USE:**

All points in 90° increments, from zero, $\pm 1\frac{1}{2}$ sec.
All points in 18° increments, from zero, ± 2 sec.
All points in 2° increments, from zero, ± 4 sec.
Worm accuracy, ± 1 sec.
Repetition of settings, ± 1 sec.
4 sec. = .0001" on 10" dia.

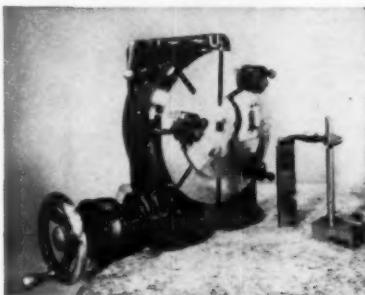
How many jobs have slipped by you because the angular spacing requirements were just too much for your equipment?

With Moore's new 11-Inch Rotary Table, you can easily handle the most precise angular measurements. Having an overall performance accuracy of ± 6 seconds throughout the entire 360° , this table is already being used successfully by several leading companies on government-sponsored precision jobs never before accomplished.

This extreme accuracy is achieved by a non-disengagable, thread-ground worm, combined with accurately spaced teeth of its mating gear. An ultra-sensitive method of angular measurement—interferometric inspection and calibration—used industrially for the first time, assures tooth spacing accuracy within less than ± 4 seconds.

You can use this rotary table for countless precision spacing applications on jig borers and jig grinders. Examples: Spacing holes in a circle on either machine; set at right angle for additional machining and inspection jobs; with its companion unit, the new No. 2 Sine Plate, to produce compound angle settings. Write today for Bulletin RT2.


MOORE SPECIAL TOOL COMPANY, INC.
728 Union Avenue, Bridgeport 7, Connecticut



Accurate in vertical as well as horizontal position. Additional vernier permits normal reading even in vertical position.



Accuracy assured by interferometric inspection and calibration. This is the first time industry has used light-wave measuring methods for precise division of the circle.

ADD  TO YOUR TOOLROOM

JIG BORERS • JIG GRINDERS • PANTO-CRUSH WHEEL DRESSERS • PRECISION ROTARY TABLES • HOLE LOCATION ACCESSORIES
SEE THE LATEST IN HOLE LOCATION EQUIPMENT AT BOOTH NO. 1249, ASTE TOOL SHOW
Use postpaid card. Circle No. 272

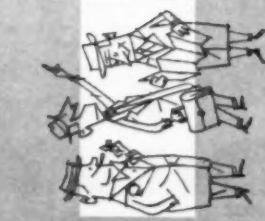
April, 1958

79

TOOLING FOR COMPETITION

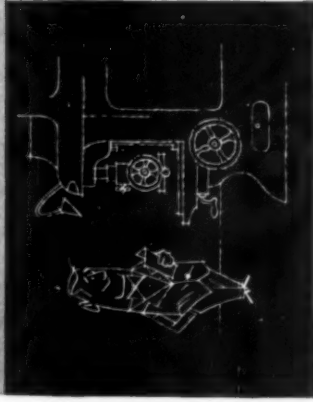
1958 ASTE TOOL SHOW AND CONFERENCE

CONVENTION CENTER • PHILADELPHIA, MAY 1-8



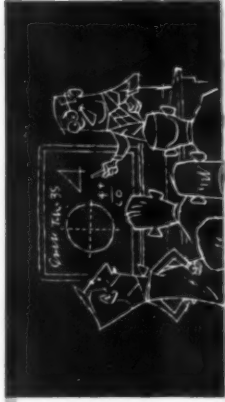
SEE all the very latest advances and improvements in more than thirty major categories of industrial products.

It's the year's most notable industrial event . . . it's your chance to see tooling's future, *your* future on display. See thousands of products, hundreds of demonstrations, presented by 487 exhibitors. Don't miss it! Plan *now* to attend.



ATTEND top-level conferences, conducted by recognized authorities, on the newest production techniques and developments.

Symposia, panels and technical papers will be devoted to subjects of vital interest to you . . . subjects like: Automation • Metal Cutting



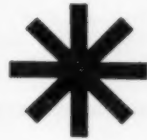
MEET and exchange ideas with management, engineering production, sales people from the nation's leading industrial concerns.

Meet them all . . . the designers, deciders, doers . . . at industry's greatest open forum for exchanging ideas, solving problems, "*tooling for competition*". Keep yourself informed, up-to-date . . . what could be more important today?

INSPECT the modern equipment and up-to-the-minute manufacturing methods being utilized in booming Delaware Valley plants.

See industry in action. Inspect such Philadelphia area plants as: Standard Pressed Steel • U.S. Steel • U.S. Navy Yard • Leeds & Northrup • Schramm, Inc. • Chrysler-Plymouth • Yale & Towne • Link-Belt • Budd Company • Brown Instrument.

AMERICAN SOCIETY



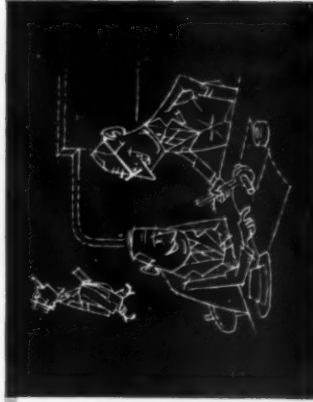
CONFERENCE

'58

MAY 1 TO 8

OF TOOL ENGINEERS

TOOL SHOW



SEND FOR YOUR REGISTRATION MATERIALS TODAY!

ASTE

NAME

Dept. C

COMPANY

10700 Puritan

ADDRESS

Detroit 38,

Michigan

CITY

ZONE

STATE

Use postpaid card. Circle No. 274

accent on Accuracy!

Whitnon BORING SPINDLE COMPONENTS

The accuracy of this gyroscope accents its ability to keep perfect balance . . . any place . . . any time



WRITE FOR
LITERATURE
TODAY.



Use Whitnon Spindles for accuracy in boring to millionths of an inch.

The accuracy of the component parts of the Whitnon Boring Spindle — when assembled — accents its ability to produce finer finishes and truer holes . . . for precise and economical performance at all times.

Whitnon Spindles are engineered for rigidity and machined to super-close tolerances . . . incorporating extra-capacity bearings and large alloy-hardened shafts to eliminate radial and axial deflection. Spring pre-loaded . . . grease lubricated . . . sealed for life . . . and dynamically balanced after assembly.

Designed and built by spindle specialists in one of the best equipped plants in the industry.

THE *Whitnon* MANUFACTURING COMPANY
ROUTE 6 AND NEW BRITAIN AVE., FARMINGTON, CONNECTICUT

Use postpaid card. Circle No. 275

MACHINE and TOOL BLUE BOOK



in ACE Drill Bushings that makes the difference!

Two years ago we made known that for some time we had been using a very special high-carbon chromium bearing steel. This new oil-hardening steel had proved that ACE Drill Bushings possessed vastly

superior wearing qualities. Ever since that time, the ACE plants have been turning out these long-wearing bushings in ever increasing quantities.

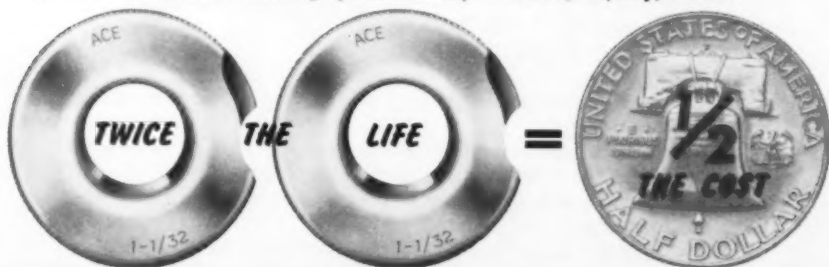
To meet the growing demand two additional factory warehouses have already come into being, one in Newark, N. J. and another in Detroit, Mich.

If you are not already doing so, we invite you to try ACE Drill Bushings. Then you'll understand why ACE is the fastest growing name in the Drill Bushing industry. A comparative test, side by side in your own jigs — will convince you too, that *when working life is doubled — bushing costs are cut in half!*

Fewer bushing replacements add bonus production savings. That's why ACE Drill Bushings of the new high-carbon chromium steel are being specified *exclusively* by cost-conscious tool men everywhere! Make a working comparison NOW with any other make bushing . . . and see "Positive-Proof" that the steel makes the difference!

Be Specific . . .

Always Specify ACE!



ACE DRILL BUSHINGS

NEW JERSEY
611 McCarter Highway
NEWARK 2
Mitchell 2-3006



HOME OFFICE
CALIFORNIA
5407 Fountain Ave.
LOS ANGELES 29
Hollywood 9-8253



MICHIGAN
10620 West Nine Mile Road
DETROIT 37
Lincoln 8-0777

See us at Booth 2052—ASTE—Philadelphia

Use postpaid card. Circle No. 276



famco SQUARING SHEARS
cut costs, save time
for W. F. Hall Printing Co.

Cutting electrotypes apart is a simple and money saving matter at W. F. Hall Printing Co. (Chicago) since they bought a Famco Squaring Shear. Previously, electrotypes were cut on a bench saw, however, this operation was both dangerous (due to flying metal) and time consuming.

Famco Squaring Shears, in your plant, can save you production time and money too.

Famco has 18 models to select from—power, foot or air—with cutting widths 22 to 72 inches and capacities to 14 gauge. And with Famco Shears you get four times more cutting life because the knives are four edged and reversible.

Find out about the hi-quality Famco Squaring Shears today!



Write for **FREE Famco Squaring Shears catalog today.**



famco machine company

3118 SHERIDAN ROAD • KENOSHA 4, WISCONSIN

AIR PRESSES • ARBOR PRESSES • BAND SAWS • DRILL PRESSES • FOOT PRESSES • POWER PRESSES • SQUARING SHEARS • MILLING MACHINES

Convenience • Economy • Efficiency •

With the NEW SEIBERT FLOATING HOLDER

(Patent Applied For)

RELIEVED KEY
SEAT—for easier
set-up.

SEIBERT THREADED
SHANK—precision
ground to insure
close adjustment.

SHUE-LOCK MICRO
NUT—graduated for
easy and accurate
adjustment.

EXTRA BEARING
CAPACITY—with-
stands heavier
thrust loads.

SHAPING MOUNT-
ING—permits rapid,
convenient changes.

ADJUSTING SET
SCREW—permits
pre-setting cutting
tool.

SEIBERT TREPAN
DESIGN—clamps
tools for close con-
centricity.

TAP COLLET

REAMER COLLET

INTERCHANGEABLE
ADJUSTABLE COLLETS
REDUCE YOUR
NUMBER OF HOLDERS

Fast Change Pre-Setting Collets Reduce Number of Holders Needed

Now, with the new Seibert Floating Holder equipped with interchangeable auxiliary collets, you can substantially reduce costs on tapping and reaming jobs requiring duplicate pre-set tooling. As illustrated, the auxiliary collet is snap-ring mounted in holder for quick and easy removal. No wrenches or drifts are required. An internal adjusting set screw permits pre-setting tools in collet without removing holders. Thus you require fewer holders per job, and because collets are inexpensive you effect substantial savings in overall tool costs. Close concentricity is maintained because tool is accurately held in collet by trepan clamp which is precision machined to close limits. Elimination of hex nut clamping principle also provides extra clearance when tapping in counter bored holes.

Heavy Duty Holder Assures Long Service Life

The holders are heavy duty roller-type and are especially designed with extra bearing capacity to assure long service life. All shank types are available in a range of sizes including the adjustable adaptor shank illustrated. Send for full information today on these new cost cutting tools.

WRITE FOR COMPLETE DATA

Get the complete story on the new Seibert Floating Holder. Ask for illustrated specification sheet or have a Seibert Sales Engineer call at your plant to check over your tooling requirements.



SEIBERT & SONS, Inc. 1004 E. 24th Street • CHENOA, ILLINOIS
QUALITY MULTIPLE DRILL SPINDLE AND PRODUCTION TOOLS

SEE US AT BOOTH 909 ASTE EXPOSITION, MAY 1-8, PHILADELPHIA

Use postpaid card. Circle No. 278

April, 1958

85



POPE engineers and builds

20,000

DIFFERENT motorized and Belt Driven

SPINDLES

one of which may be just the one to
LOWER YOUR PRODUCTION COST

Here are only a few representative Pope Precision Spindles:



FOR SURFACE GRINDING

POPE 1, 2 and 3 HP Totally Enclosed 1800 and 3600 RPM Motorized, Cartridge Type Spindles with double row cylindrical roller bearings of enormous capacity for superior performance and long life, plus separate thrust bearings for no endwise movement of the shaft.



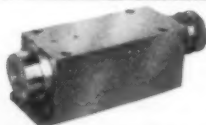
FOR HEAVY DUTY MILLING AND GRINDING

POPE $\frac{1}{4}$ to 100 HP Direct Motorized Spindles operate in any position — flanged or tapered noses — equipped with super-precision, double-row roller bearings and preloaded ball thrust bearings. Top quality performance is assured on skin milling, grinding, boring and other operations as well as milling.

FOR TOOL AND CUTTER GRINDING

POPE Super-Precision 1 HP, 3600 RPM Motorized Tool and Cutter Grinder Clearance Angle Swivelling Heads

provide angular adjustment in a vertical plane. They pay for themselves in time saved. Cup wheels can be used for practically all clearance angles.



FOR BORING ROUND HOLES WITHIN MILLIONTHS OF AN INCH

POPE Heavy Duty Boring Spindles assure smooth, chatter free, continuous high production of accurate parts. Belt driven or motorized, in a wide range of horsepower and speeds.



FOR INTERNAL GRINDING

POPE Precision Internal Grinding Spindles have the super-precision bearings to withstand both axial and radial loads and to produce better finished ground holes. Their ability to take heavy cuts means increased production. Wheel life is increased, too. For Bryant, Cincinnati, Excello, Heald, Landis and Norton Grinders.

FOR HIGH CYCLE GRINDING AND MILLING
POPE Super-Precision, High Frequency, Heavy Duty

Spindles are available for speeds up to 100,000 RPM. They are unequalled for low cost maintenance, long life, trouble-free operation and rugged ability to cut metal fast.



Send us your specifications and get prompt quotations on the one best Spindle for you out of the 20,000 different Precision Spindles that bear the name "POPE."

No. 116

POPE

**ENGINEERS AND BUILDS STANDARD AND SPECIAL
PRECISION ANTI-FRICTION BEARING SPINDLES
FOR EVERY PURPOSE**

POPE MACHINERY CORPORATION • 261 RIVER STREET • HAYERHILL, MASS.

Established 1920

Who Would You Trust to HEAT-TREAT a BROACH Like This?

At the time this Red Ring Naloy Broach* reached heat-treat, about \$5,000.00 had been spent on it. One mistake during the heat-treat operation could reduce it to scrap. In addition, the resulting delay might seriously disrupt our customer's production schedules.

These are only two of the reasons why Red Ring Broaches are heat-treated in our own plant under control of our own metallurgists. Here we have equipment especially designed and selected for just this type of work. Here we have an organization with a background of know-how that has been building up for the last 30 years.

Complete control over every production operation by men who KNOW broaches, gives the Red Ring Broach that extra precision—that extra service life—that added economy for the user.

*See the cover illustration of *American Machinist*, November 4 issue.
7994



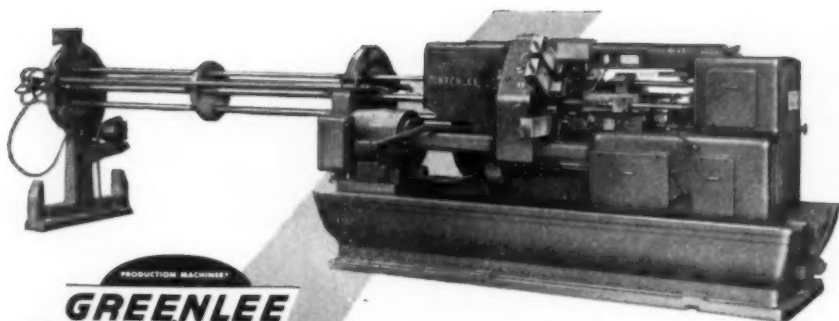
WE ARE BROACH AND SHAVING
EQUIPMENT OF ROTARY DRILLS
AND PLANING MACHINES

**NATIONAL BROACH
& MACHINE CO.**

5600 ST. JEAN • DETROIT 13, MICHIGAN

WORLD'S LARGEST PRODUCER OF GEAR SHAVING EQUIPMENT

9 1/2" Dia.
69" Long
5/7 D. Pitch
44 Teeth



PRODUCTION MACHINERY
GREENLEE

AIR-FEED AUTOMATIC



Write today for Catalog A-405, or better still, have the Greenlee man call and show you the way to more profitable production with this machine.

- 1 Permits Greater Job Versatility
- 2 Easily Adapted To Multiple Feedouts
- 3 Provides Longer Stock Feedout
- 4 Eliminates Stock Scoring
- 5 Reduces Stock Reel Noise
- 6 Eliminates Stock Pushers
- 7 Eliminates Feedout Cams



**GREENLEE
BROS. & CO.**
1834 MASON AVE.
Rockford,
Illinois

WICKMAN-BROWN *Fully Floating* MICROMETER ADJUSTABLE REAMERS

Typical Applications:

- ◆ LATHES ◆ TURRET LATHES
- ◆ MULTI SPINDLE AUTOMATICS
- ◆ CHUCKING MACHINES
- ◆ SINGLE SPINDLE AUTOMATICS
- ◆ VERTICAL AND HORIZONTAL BORING MILLS
- ◆ JIG BORERS
- ◆ GENERAL TOOL & DIE ROOM AND SHOP MAINTENANCE

Type S for through hole reaming.

Type SL for blind hole reaming.

Range in Sizes:
 $\frac{3}{4}"$ to $8"$
in only
18 units

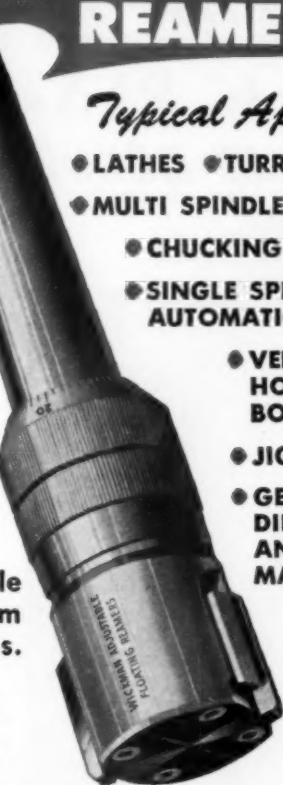
Type SO for through hole reaming only—range from $\frac{1}{2}"$ to $\frac{3}{4}"$ in ONLY 5 Sizes.

● The initial cost of a Wickman-Brown reamer is your last major expenditure. The blades, available in both high speed steel and tungsten carbide, are precision ground and may be sharpened repeatedly without affecting micrometer reading.

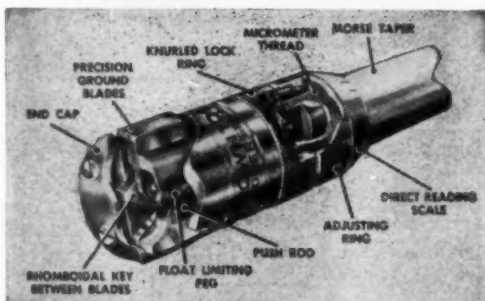
Eliminates costly floating tool holders by built-in positive and pre-determined float.

Down time is eliminated on production due to micrometer adjustability without removal of blades or unit from machine.

Distributors'
Inquiries Invited



Visit our
Booth 1405
ASTE Show



THE Wickman
MANUFACTURING CO.

10329 CAPITAL AVENUE
(OAK PARK)
DETROIT 37, MICHIGAN

This

Cadillac

6" PLA-CHEK GAGE IS ACCURATE to .00005"



Cadillac
PLA-CHEK

For checking smaller jobs, gages, tools and dies, this portable 6" Cadillac PLA-CHEK Gage is accurate to .00005". It can easily be checked in and out of your tool crib to be used on the surface plate or at the machine. It is completely self-contained and extremely simple in operation. Speeds inspections from minutes to seconds.

Capacity of the 6" PLA-CHEK model can be increased by the addition of a 6" riser without affecting accuracy or sacrificing portability. Send coupon TODAY for complete details!

MAIL THIS COUPON FOR COMPLETE DATA

CADILLAC GAGE COMPANY
P.O. BOX 3806, DETROIT 5, MICHIGAN

Without obligation please rush complete information on the Cadillac PLA-CHEK Gage line to:

Name

Company

Address

City Zone State

Cadillac
GAGE COMPANY
P.O. BOX 3806 • DETROIT 5, MICH.

Let's not relax quality control principles

Is the old philosophy, "let the buyer beware" creeping back into the economic picture, or is it just that some companies in the metalworking industry are carrying their cost consciousness too far? We can't remember a time when both retailers and consumers were protesting the low standards of some manufacturers' products which require so much servicing.

If we're not careful it's the little things that can hold us back today. Have you ever bought a \$10,000 tool that was down because the limit switch wouldn't work, a screw fell out, a coupling came loose or there was backlash in the gears? What does a man think of a lawnmower that was purchased because the advertisement bragged about the special locknuts and yet it falls apart? What does a man think of his luxury automobile when he can't play his radio, because the knob fell off and he can't find it? Chances are the P.A.'s in both cases bought the screws that caused all the trouble for a tenth of a cent less than screws of proven quality.

Purchasing is a profession that has made great progress in its outlook on things, but we hear reports that this recession has brought out the worst in some of them because of pressure from an overly cost conscious manager.

This search for the absolute lowest

price can be overdone because the result is going to be shoddy merchandise. Furthermore, extreme pressure from purchasing to buy things at the lowest price can ruin some manufacturers, because it reduces their profits to a point where they cannot afford the improved facilities to raise their standards.

The relations between purchasing and receiving inspection in many companies can stand some improvement. This push for low prices can get to be a game. On the one hand the P.A.'s make their pitch for a low price; the next move is to get these parts through their receiving inspection, after which the responsibility no longer rests with the purchasing department.

Buying cheap is not economical. It's not going to help profits, because there's nothing worse than putting substandard parts or fasteners in assemblies that go into end products that will require excessive servicing.

Quality and reliability are synonymous, and the machine tools and inspection gages are available today to enable any metalworking plant to adhere to strict quality control principles. We suggest you turn to page 107 and read what one outstanding authority has to say about quality control.

—PAUL A. MELINE
Managing Editor

Quality Control—Daily It Becomes More Critical—Page 107

Tooling for Competition

ASTE Tool Show and Annual MeetingPage 175

Quality Control. This interview with H. Thomas Hallowell, Jr., president of Standard Pressed Steel Co., a man who has been cited for his contributions to the art and science of management, presents his thinking on what's involved in an effective quality control program. Mr. Hallowell talks about the need for tools with minimum built-in error, training of personnel, what's involved in getting quantity workmanship from employees, the importance of constant research and standardization activities**Page 107**

Turning Operations at Allison. They're cutting turning costs and upping production at Allison Division of GMC. Each new tracer lathe replaces four turret-type lathes, single spindle chuckers displace five turret lathes. Turret lathes still have their place, however, and the addition of hydraulic equipment enables one man to operate two turret lathes.**Page 114**

Boring and Sanding Problems. A problem facing Chance Vought Aircraft, Inc. was to speed up the facing and boring of their 10-foot rocket tubes. Another was how to get a perfectly flat seal for the wing skins.**Page 119**

Pneumatic Controls for Drill Press Set-ups. Laborious drilling work can be made semi-automatic or automatic and individual operations may be combined by equipping standard drill presses and drill press heads

with pneumatic controls for spindle feed and for indexing, positioning and clamping the work. **Page 120**

Controlling Grinding Feeds. In the Torrington Company plant, an electronic actuator called an Inchworm motor corrects mechanical and human errors in the centerless grinding operation on precision anti-friction needle bearings before assembly. **Page 129**

Welding Head. Automatic submerged arc welding of longitudinal and round about seams on inner covers of annealing furnaces for coiled strip steel is handled by a novel arrangement in the Weirton Steel Company maintenance shop.**Page 133**

Tape Controlled Milling for the Small Plant. A new magnetic tape-controlled profile and contour milling machine for small quantity production has been developed by the Morey Machinery Company and General Electric.**Page 137**

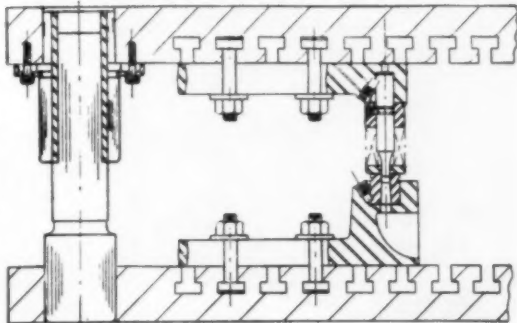
3-D Profile Milling with Infinitely Variable Speeds. The first 3-dimensional profile milling machine with a totally enclosed, water cooled dc spindle motor with infinitely variable speeds from 50 to 6000 rpm was unveiled recently.**Page 141**

Tooling for Competition, theme of ASTE Tool Show. Here is the complete program, including technical conferences and tours, and the list of products to be displayed are depicted and described.**Page 175**

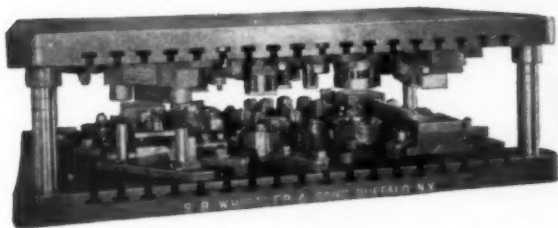
ADJUSTABLE DIES

by WHISTLER

• Operate like a single purpose die • Easy to set-up and make changes • Interchangeable and re-usable parts always ready for a new job • Reduce die costs to a new low • Pierce holes in any desired arrangement of shapes and sizes • Precision piercing of materials to $\frac{1}{4}$ " thick steel.



Above: Sectional drawing of a Whistler adjustable punch and die unit assembled in T-slot die set.



At the left: A completely assembled Whistler adjustable die ready for the press.

YOU NEED THIS CATALOG

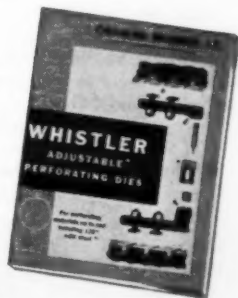
to see for yourself in dollars and cents what this adjustable die making method can do for your plant. Send for it right now...without obligation.

S. B. WHISTLER & SONS, INC.

746 Military Road, Buffalo 23, N. Y.


ADJUSTABLE, MAGNETIC and CUSTOM DIES FOR ALL INDUSTRY
Direct Factory Representatives Located in Principal Industrial Areas

SEE US IN BOOTH 1525 AT THE A.S.T.E. SHOW
Use postpaid card. Circle No. 284





**WE INVITE
COMPARISON**



**BUY THE BEST
FOR LESS!**

**Queen
City**

grinders and buffers

You save when you buy and when you use QUEEN CITY Grinders and Buffers. Priced 20 to 30% under competing tools, they're built to stand up under the hardest use. Extra heavy spindles, extra duty ball bearings and special motors all contribute to long, low-cost service. **30-Day Trial Offer!**

There is a complete range of QUEEN CITY Grinders and Buffers . . . floor and bench types . . . in sizes from 1/3 to 10 H.P.

Write For Free Catalog Today!

QUEEN CITY MACHINE TOOL CO.
3913 Kellogg Ave. - Cincinnati 26, Ohio

Use postpaid card. Circle No. 285

Meetings, Conventions and Exhibitions

Apr. 1-3—ASME Instruments & Regulators Conference, University of Delaware, Newark, Del.

Apr. 9-10—ASME Railroad Conference, Statler Hotel, Cleveland, Ohio.

Apr. 10—ASME Products Engineering Conference, Bancroft Hotel, Worcester, Mass.

Apr. 14-15—ASME Maintenance & Plant Engineering Conference, Penn-Sheraton Hotel, Pittsburgh, Pa.

Apr. 14-17—Annual Design Engineering Show, International Amphitheatre, Chicago. Registration forms, program and hotel information may be obtained from Clapp & Poliak, Inc., 341 Madison Avenue, New York 17, N.Y.

Apr. 15-17—ASME Metals Engineering—AWS Conference, Statler Hotel, St. Louis, Mo.

Apr. 24-25—ASME Management—SAM Conference, Statler Hotel, New York.

Apr. 29-30—Westinghouse Machine Tool Forum, Hotel Statler, Buffalo, N.Y.

Apr. 30-May 2—Semi-annual Meeting, Grinding Wheel Institute and Abrasive Grain Association, Grand Hotel, Point Clear, Alabama, sponsored by Hunter-Thomas Associates, 2130 Keith Building, Cleveland 15, Ohio.

May 1-8—Annual Tool Show and Meeting of American Society of Tool Engineers, Convention Center and Ben Franklin Hotel, Philadelphia, Pa. Headquarters: Mr. Harry E. Conrad, Executive Secretary, 10700 Puritan Avenue, Detroit 21, Michigan.

May 3-4—National Tool & Die Mfrs. Association Spring Board Meeting, Hotel Statler, Washington, D.C. Headquarters: 907 Public Square Bldg., Cleveland 13, Ohio.

May 12-16—Southwestern Metal Congress & Exposition, Automobile Building, State Fair Park, Dallas, Texas, sponsored by the American Society for Metals, 7301 Euclid Avenue, Cleveland 3, Ohio.

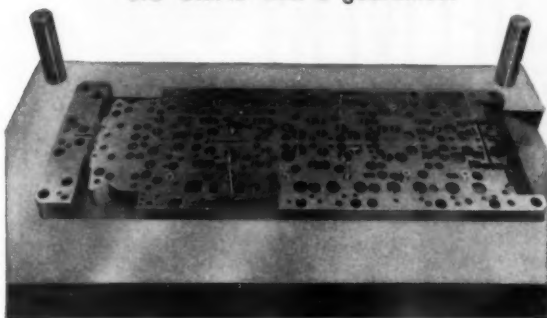
May 26-28—Triple Industrial Supply Convention—American Supply & Machinery Manufacturers' Association, Inc., Waldorf-Astoria Hotel, New York, sponsored by Hunter-Thomas Associates, 2130 Keith Building, Cleveland 15, Ohio.

June 9-12—A national conference on materials handling, sponsored by the American Society of Mechanical Engineers, will be held in

H  LES JIG GROUND with

Vulcanaire

Provide yourself with this inexpensive* instrument for use on your present equipment and JIG GRIND with a guarantee.



Borrow our
instructive
11 minute
movie on
Jig Grinding.

A seven station die from Vulcan's contract Tool Room . . . Standard sized punches and buttons were used. But since forming and piercing operations were involved, hardening of the sections was necessary followed by JIG GRINDING. Result: Close tolerances held easily and perfect progression through-out — another satisfied customer.

*Vulcanaire equipment pays for itself on the first job.

SERVICES OF YOUR TOOL ROOM IN DAYTON
ENGINEERING • PROCESSING • BUILDING • TOOLS
DIES • SPECIAL MACHINES • VULCANAIRE JIG
GRINDERS • MOTORIZED ROTARY TABLES • BREHM
"SHIMMY" AND RELATED DIES • AUTOMATION

VULCAN TOOL CO., YOUR TOOL ROOM IN DAYTON
760 LORAIN AVENUE • DAYTON 10, OHIO



conjunction with National Materials Handling Exposition, produced by Clapp & Poliak, Inc., New York, at the Public Auditorium, Cleveland, Ohio.

Sept. 29-Oct. 3—ASTE Semi-Annual Meeting and Western Tool Show, Shrine Exposition Hall, Los Angeles, Calif.

Oct. 15-17—American Machine Tool Distributors' Association Annual Meeting, Sheraton, Plaza Hotel, Boston, Massachusetts,

sponsored by the Association, 1900 Arch Street, Philadelphia 3, Penna.

Oct. 27-31—National Metal Congress & Exposition, Public Auditorium, Cleveland, Ohio, sponsored by American Society for Metals, 7301 Euclid Avenue, Cleveland 3, Ohio.

Nov. 5-9—Annual Convention—National Tool & Die Manufacturers' Association, 907 Public Square Building, Cleveland 13, Ohio, at the Sheraton Hotel, Philadelphia, Penna.

FAST DELIVERY on NOPAK shelf-stock AIR CYLINDERS!

Your choice of —

- 6 Mounting Styles
- 8 Bore Sizes
- 9 Stroke Lengths

When you specify NOPAK "Shelf-Stock" Air Cylinders you save money 3 ways:

1. You eliminate waiting for "specials".
2. You reduce engineering costs.
3. You get top quality NOPAK Air Cylinders at the lowest possible prices.

NOPAK "Shelf-Stock" Air Cylinders are available in a wide range of bore sizes and stroke lengths from 1½" x 1" to 8" x 15". No other manufacturer offers such a wide range of selection in Brass Tubing, Precision Machined, Cushioned Air Cylinders at comparable prices.



MODEL "E"
with Clevis and
Mounting Bracket

NOW! 5" BORE

replaces the 4½" bore in the NOPAK Shelf-Stock line, with no price change — extra cylinder power at no extra cost. Compare quality and prices, and you'll specify NOPAK. Write for Current Listings and Catalog 101.

GALLAND-HENNING NOPAK DIVISION • 2754 S. 31st St., Milwaukee 46, Wis.

NOPAK VALVES and CYLINDERS

A-6-701-19

Use postpaid card. Circle No. 287

Cost-cutting **ideas** ...at your doorstep

See them in the **DENISON MULTIPRESS** mobile display

Loaded with ideas and tips to *help you cut costs*... the new DENISON MULTIPRESS mobile display is rolling your way!

See the DENISON 1-ton hydraulic MULTIPRESS in action "on your doorstep." It's industry's most versatile tool... and *your* best bet for 101 different operations. Make *your* date with the DENISON MULTIPRESS mobile display today!

Write today for full details. DENISON ENGINEERING DIVISION, American Brake Shoe Co., 1245 Dublin Road, Columbus 16, Ohio.



Denison, Denison HydrOILics, and Multipress are registered trademarks of Denison Eng. Div., ABSCO

DENISON
HydrOILics

HYDRAULIC PRESSES • PUMPS • MOTORS • CONTROLS

Use postpaid card. Circle No. 2A

read how you can
cut your metalworking
costs just as these
profit-conscious
manufacturers
across
the
nation
are doing
every
day!



IN PASADENA, the Consolidated Electrodynamics Corp. achieves "light tight" fits by using a Di-Acro Power Shear to make parts for scientific analytical instruments. Accuracy to .002" has eliminated costly milling.

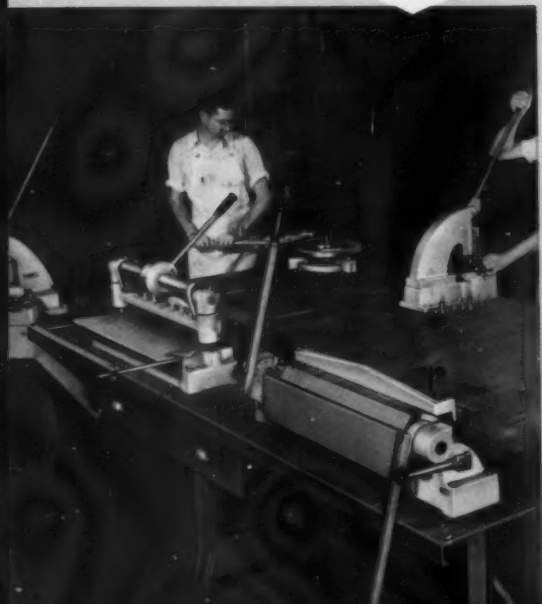


IN MINNEAPOLIS, the Hiawatha Metalcraft Co. has stepped up production of push plates, kick plates and other hardware by installing a Di-Acro Power Punch Press that eliminates slower and more expensive drill press work.



IN INDIANAPOLIS, the P. R. Mallory Co. develops new electrical switches on this Di-Acro Shear, Brake and Punch Press, eliminating hand forming of test models. Metals and plastics are handled at tolerances of less than .010".

IN SCHENECTADY, General Electric saves many man hours by using a Di-Acro Punch Press, Notcher, Bender, Shear and Brake for special projects in their Aeronautic & Ordnance Systems Division. Big machines are left free for production.



YOUR FIRST JOB MAY EASILY PAY FOR YOUR PRODUCTION MACHINERY!

On just one job your complete Di-Acro production metal-working equipment may easily pay for itself. Your second job and all the rest cost little or nothing for tooling because of these machines' capacity for rapid, easy change over—profits come quickly.

In each machine our tool designers have achieved a *simplicity* of construction that makes "Die-Less Duplicating" possible and puts money in your pocket. This brings original equipment costs low enough to allow your set-up to pay for itself almost at once. A minimum of moving parts and easy operation makes them ideal for model shop work or production runs. Hardened steel cutting and forming edges give you die accuracy without the cost of dies.

For production short cuts and operating details that interest you, check the boxes on the postage-free card and mail it today.

See Di-Acro machines in operation
Booths 813-821
ASTE Show, May 1-8, Philadelphia

pronounced
die-ack-ro

di-acro
PRECISION
METALWORKING
MACHINES

Consult the yellow pages of your phone book for the name of your nearest Di-Acro distributor.

O'NEIL-IRWIN MFG. CO.
314 8th Ave. • Lake City, Minn.



☐

☐

☐

☐

☐

☐

☐

☐

☐

☐

☐

☐

Di-Acro Precision Machines for Die-Less Duplicating—simple machine set-ups with methods and short cuts for duplicating parts with die-accuracy at a fraction of die cost.

Di-Acro Benders and over 90 diagrams describing bending operations in bar and flat stock, tubing, pipe, angle, channel and special shapes.

Di-Acro Rod Parters in a booklet telling how to cut round bar stock—also square, hex and other shaped bars you may encounter.

Di-Acro Press Brakes and a description of operations in air bending, box forming, punching, hemming, flattening and other press brake uses.

Di-Acro Punch Presses—including new turret press—and a variety of methods you can employ in punching, blanking and forming ferrous and non-ferrous metals are explained.

Di-Acro Shears—a catalog that describes precision cutting of hard and soft metals, plastics, fibre, mica, leather and rubber.

Di-Acro Rollers and the modern way of forming sheet stock (no flat spots) is covered in this thoroughly diagrammed bulletin.

Di-Acro Hand Brakes with illustrated explanations on forming close reverse bends, hems, tabs, rectangles, squares and tapered shapes.

Di-Acro Notchers—machines and methods they employ to notch sheet materials up to 16 gauge without using heavy presses and dies.

Di-Acro Spring Winders complete with illustrations on how you can make a variety of extension and compression springs in your own shop.

O'NEIL-IRWIN MFG. CO.
314 8th Ave., Lake City, Minn.

Please send information checked above to:

NAME _____

ADDRESS _____

Postage
Will Be Paid
by
Addressee

BUSINESS REPLY CARD

First Class Permit No. 13, Lake City, Minn.

O'NEIL-IRWIN MFG. CO.

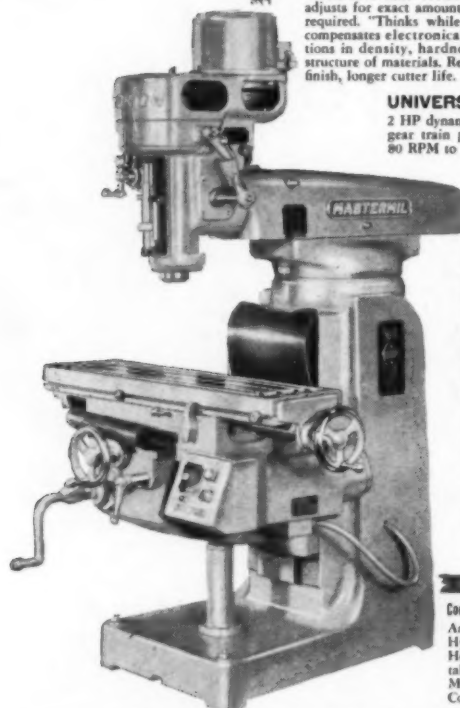
314 8th AVENUE

LAKE CITY, MINNESOTA

No
Postage Stamp
Necessary
If Mailed in the
United States

Eventually you'll buy a GORTON MASTERMIL

here's why



DYNA-DRIVE "The Torque-Thinking" Table Feed

"Feels as it feeds" ... automatically adjusts for exact amount of torque required. "Thinks while it works", compensates electronically for variations in density, hardness, molecular structure of materials. Result: Superbly fine finish, longer cutter life.

UNIVERSAL SPINDLE HEAD

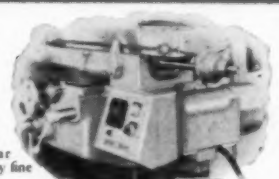
2 HP dynamically balanced motor with belt and gear train provides wide range of speeds from 80 RPM to 5,600 RPM. Head swivels 90° left or right, head, ram and turret rotate 180°. Cross movement 14 inches. Push button starting.

DOWN FEED INFINITELY VARIABLE

Feeds may be varied infinitely from 0" to 5" independent of spindle speeds. High efficiency belt drive. Direction and rate of feed separately controlled.

PERMANENT ACCURACY BUILT-IN

Distortion is prevented by extra heavy one-piece column cast with over-size ribbing ... extra heavy alloy steel turret clamping bolt (1½" dia) with 3-point clamping action ... heavy dovetail way full length of vertical column face ... extra large table, knee and 24" saddle (2" longer than table travel) ... square lock bearings with long, narrow guide between knee and saddle ... positive locks ... extra heavy feed screws ... bearing surfaces hand-scraped.



Complete Versatility Through Attachments Built-In or Field Installed.

Among such equipment is, Trace-Master Hydraulic Tracer Control, Duplicator Tracer Head and/or Table with base, saddle and table in one unit, 6" Raising Block, End Measuring Rods and Dial Indicators, Self-Contained Coolant System.

Write for Bulletin 2699-1404.

© 1958 George Gorton Machine Co.



GEORGE GORTON MACHINE CO.

1404 RACINE STREET • RACINE, WISCONSIN

Tracer-Controlled Pantographs, Duplicators — standard and special ... Horizontal and Vertical Mills, Swiss-Type Screw Machines, Tool Grinders, Small Tools and Accessories.

SINCE 1893



Use postpaid card. Circle No. 2D

A8-1008

We are calling attention to the Conn series in the current issue of **Blue Book**. You may be interested to know that we are entering upon a long series of machinability determination using Optimization as the spring board. The excellent work that Dr. Gilbert and associates, such as Mr. Conn, have done in this field made it possible to provide industry with truly worthwhile machinability determination. We have gone far enough along these lines to launch a full fledged program that will consume more than several years.

HORACE FROMMELT

Director
Spring Garden Institute
Philadelphia, Pennsylvania

Washington Outlook

We note in your February issue that you tell your readers about our activities in the Division. We receive several copies of the Blue Book and they are used quite extensively by our staff and others as reference material. We appreciate very much the manner in which you provide guidance to industry concerning our activities so that they in turn can help us.

N. A. OLSEN
DIRECTOR
METALWORKING EQUIPMENT
DIVISION
Washington, D.C.

Distribution

Needless to say, we are quite impressed with the distribution of your Machine and Tool Blue Book.

A. H. MUSSGUG
APPLICATIONS & SERVICE
MANAGER
HELI-COIL CORPORATION
Danbury, Connecticut

Optimization

Please send me ten copies of "How to Get More from your High Production Machines" by Harry Conn as printed in the February issue of Machine and Tool Blue Book.

W. K. CONWAY
MANAGER OF INDUSTRIAL
ENGINEERING
THE LOUIS ALLIS CO.
Milwaukee, Wisconsin

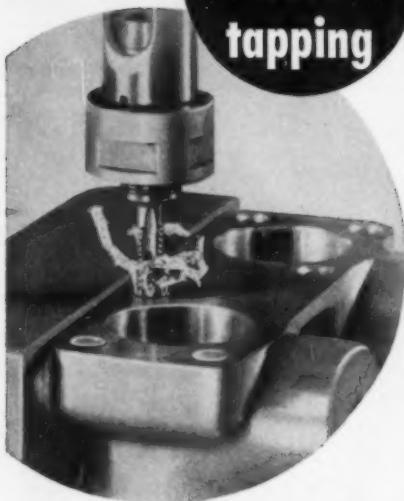
. . . Please forward three copies of your 3-part article, "How to Get More from your High Production Machines" by Harry Conn.

JOHN N. MUIR
PRODUCTION PROJECT ENGINEER
AMERICAN MACHINE &
FOUNDRY COMPANY
Buffalo, New York

. . . Will you please send to the writer's attention, if available, six copies of the "How to Get More from your

**your
solution
to:**

**blind
hole
tapping**



... tap cartridges

provide clean, chip-free, tapped blind holes. CARTRIDGE TAPPING . . . consists of tapping into TAP-CARTRIDGE which has been introduced into the drilled hole. It obtains smoother, more nearly perfect formed, and uniform threads to the very bottom of a hole in any material. The newer materials, such as magnesium and plastics are easily tapped in one rapid and uniformly successful operation.

. . . saves time, labor and money. Tap life is increased three, five, even ten times with definite reduction in scrap, and improvement in production and product.

. . . replaces COOLANTS and LUBRICANTS with clean, dry TAP-CARTRIDGES.

A quantity sufficient for trial on your most difficult operations will be furnished without cost or obligation.

THE
**TAP-
CARTRIDGE** CO.
2020 THOMAS ST.
HOLLYWOOD, FLA.

Use postpaid card. Circle No. 288

Letters

continued

High Production Machines" by Harry Conn. Chief Engineer, Scully-Jones & Co.

AUGUST G. GRESSELL, JR.
TIME STUDY DEPARTMENT
LAKE ERIE ENGINEERING
CORPORATION
Buffalo, New York

. . . Would you please send us two sets of reprints or tear sheets on each of the following articles appearing in the February issue of Blue Book:

1. "Where do we Stand Today with Metal Cutting Research?"
2. "How to Get More from your High Production Machines."

DONALD L. MINER
TIME STUDY DEVELOPMENT
LETOURNEAU-WESTINGHOUSE
COMPANY
Peoria, Illinois

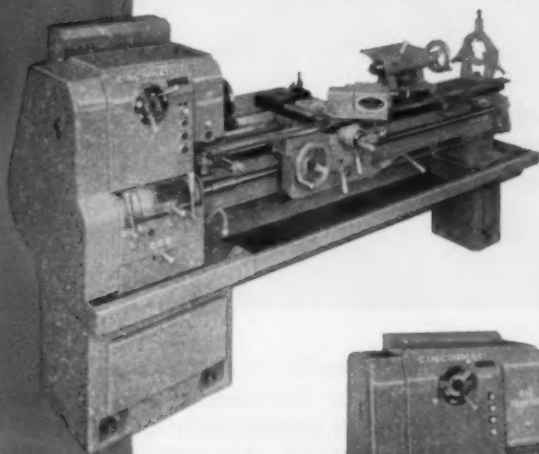
. . . We are very much interested in the principles of "Optimation." Will you please send three reprints or tear sheets of Mr. Conn's article, "How to Get More from your High Production Machines."

T. F. ROGERS
TOOL ENGINEER
BIJUR LUBRICATING CORPORATION
Rochelle Park, New Jersey

. . . Please forward a copy of the report on "Optimation" to my office.

ROBERT EDWARD MAYERS
SUPERVISOR
INDUSTRIAL ENGINEERING DEPT.
SKF INDUSTRIES, INC.
Philadelphia, Pennsylvania

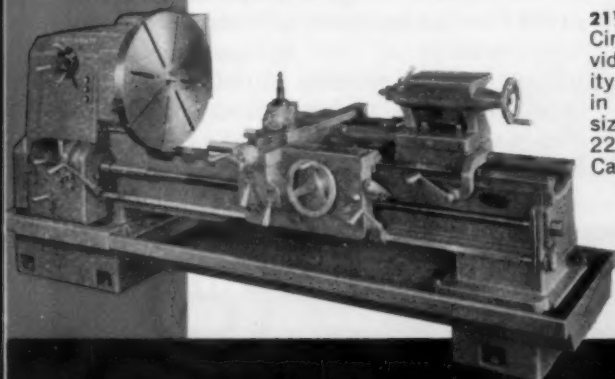
Don't just talk about lowered costs . . . GET THEM with CINCINNATI lathes!



15" HYDRAGUIDE Tracer Lathe. Compact and convenient, with "pushbutton" change-over to tracer from standard lathe operation . . . all controls grouped at front of lathe. Built in 15" and 18" swing sizes. Tracer mechanism available for 15" and 18" Model LC Tray-Top engine and toolroom lathes now in service. Catalog: H-150.



21 1/2" Cincinnati TRAY-TOP Engine Lathe. Engine and toolroom lathes are built in 10", 12 1/2", 15", 18", 21 1/2" and 26" swing sizes. Catalog: T-130.



21 1/2" Fixed Gap Bed Lathe. These Cincinnati TRAY-TOP Lathes provide increased capacity, versatility and flexibility at low cost. Built in 15", 18", 21 1/2" and 26" swing sizes; actual swing over gap is 22", 27", 32" and 37" respectively. Catalog: T-130.

See your nearby **C L & T Dealer**, or write to us direct. **CINCINNATI LATHE AND TOOL CO.**, 3209 Disney St., Cincinnati 9, Ohio



center on **cincinnati lathes and drills**

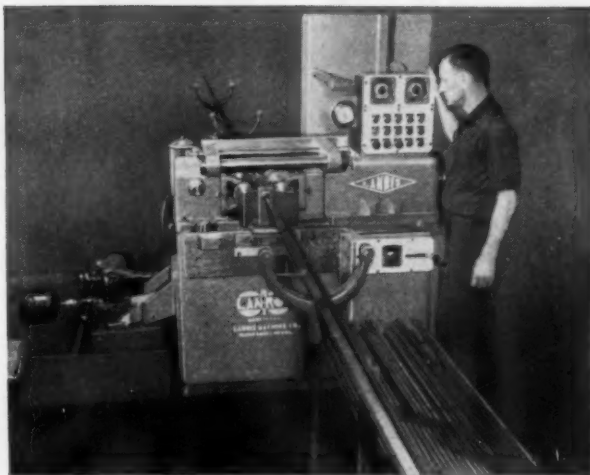
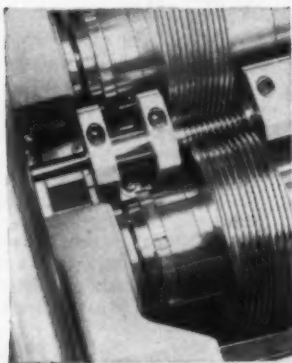
ENGINE, TOOLROOM, TRACER AND FIXED GAP BED LATHES AND A COMPLETE LINE OF DRILLING MACHINES



**4 feet
of
thread**

per minute

*with the
LANHYROL thread
rolling machine*



20-foot bar lengths of C1117 steel are being formed by Thrufeed Rolling at the rate of 48 linear inches per minute at the M & S Manufacturing Co. in Hudson, Michigan. The $\frac{3}{4}$ "—6 pitch left-hand Acme threads are held within .001" on the pitch diameter throughout the entire bar length. Over 59,000 feet of thread have been produced with a set of roll dies.

The LANHYROL Machine is designed to produce quality threads at high rates of output. Its range and flexibility is so great that we recommend your consideration of this equipment for any job requiring precision threads of excellent finish at high production rates. Please send specifications and ask for Bulletin E-60.

487

LANDIS Machine COMPANY

WAYNESBORO · PENNSYLVANIA · U.S.A.

"Appeals to the consumer to spend more this year are empty without solid demonstrations by business that it not only believes in the possibility of new high levels of prosperity this year but that it is already moving in that direction. What is needed is a test-marketing state of mind to stimulate consumer spending. Many of the same businesses which spend millions to pre-determine consumer buying attitudes and to test-market in the launching of new products lag when it comes to applying the same principles to stimulating tomorrow's markets for today's proven products."

Andrew Heiskell
Publisher, Life Magazine

President Waits for Upswing Democrats Draft Proposals

While the President waits for an economic upswing, shelving for the present measures already prepared to combat the recession, Administration fiscal advisers are working quietly on a tax reduction program. One high official had this to say: "Those best informed expect business to start upward by summer, but it would be the height of folly not to be thinking now in terms of what might be done if events take a different course."

A tax cut initiated just as the economy might be turning upward would only add to inflationary pressures; the Republicans have decided to mark time for the present.

While they wait, the Democrats are working overtime to develop

a comprehensive anti-recession program of their own. Their proposals include: tax cuts of more than \$5 billion; costly public works projects; a speed-up in the national highway program; a new Reconstruction Finance Corporation designed exclusively for small business; Federal aid to education, with special provisions for the development of scientists; an increase in unemployment benefits; more Federally assisted hospital construction.

Tax cuts would be geared to benefit low- and middle-income groups. Instead of their original plan to support a \$100 increase in personal exemptions, the Democrats now favor a rate lower than 20% on the first \$2000 of personal income.

Democratic leaders hope to have their tax plan ready by early April.

They are determined to beat the Administration in the tax cut race.

All this Democratic activity has the Republicans worried. With the President sitting tight, GOP leaders fear that defense spending and other anti-recession measures will be too late to help in the election. In their opinion, a generous tax reduction would be the greatest shot in the arm the economy could get, and to let the Democrats take credit for a major tax cut would be disastrous.

Anti-Government Competition Act

The proposed Anti-Government Competition Act (S.1539, H.R.-5808) would provide a Congressional order to all Federal agencies to get out of business-type activities, require the Department of Commerce to investigate business complaints of unfair competition, require the Budget Bureau to review each proposed government activity which might be competitive with business, and instruct the President to submit an annual report on action taken.

Strong business support should induce the Senate and House Government Operations Committees to hold hearings on the legislation.

Chamber Proposes Incentives To Meet Needs For Scientists

The U.S. Chamber of Commerce has adopted a new program for expanding and improving scientific education. It has asked the House Ways and Means Committee to develop Federal tax law amendments which would:

1. Increase incentives for individual, foundation and corporate financial support of higher education.
2. Permit teachers to deduct from gross taxable income reasonable costs for courses taken to increase their competence and professional position.
3. Permit deduction from gross taxable income of a reasonable percentage of the costs, including tuition and fees, of college and university students.

But the House Education and

"The trade agreements program has been a unique and beneficial undertaking by our country in the trade field. Its continuation is essential to preserve our gains and to lead the way to a broader realization of the mutual benefits that it makes possible for us and for our free world partners."

Sinclair Weeks
Secretary of Commerce



New Lamina Wear Plates Last Longer, Cost Less!

Now . . . save money and get better performance wherever you have sliding contact between flat metal parts! The principle of bronze electroplated on a steel backing originated with Lamina Bronze-Plated Guide Pin Bushings. Proven during countless millions of punch press hits, it is now being used successfully to produce flat wear plates.

This new concept in wear plate design combines the low cost, ready machinability and solid backing of steel with the long-wearing, non-seizing, free-running properties of a copper-tin bronze alloy. Lamina Bronze-Plated Wear Plates are

flat, parallel, and can be easily machined to suit your application. Standard sizes available from stock. End costly wear problems and reduce expensive downtime now! Write for complete information.

Lamina

DIES AND TOOLS, INC.

P.O. BOX 31, ROYAL OAK, MICHIGAN

Manufacturers Of Lamina Guide Pins, Bronze-Plated Bushings, Progressive and Lamination Dies

Booth No. 929, A.S.T.E., Exposition

Use postpaid card. Circle No. 291

Labor Committee is hearing insistent demands for Federal intervention through scholarships and guidance. The Chamber is preparing its answer for the Committee, "lest intervention become a reality which stifles the voluntary effort it can never replace." It has asked state chambers for lists of individuals and organizations who will testify also in support of individual, local, and state responsibility.

Prices Rise While Production Drops

For the first time in U.S. history, industrial production has dropped about 10% in a year while simultaneously wholesale prices rose 2% and cost of living index advanced 4%, to an all-time high. If the end of this strange "inflationary recession" is not in sight by May or June, the Administration will

probably invoke more drastic measures than are now being planned. It is still hoped that our improved "built-in stabilizers," plus increased defense spending, a slowing-up of inventory cutbacks, accelerated spending for defense, roads, and housing will put an end to the drop.

But this does not necessarily mean a resurgence to booming prosperity. A state of stagnation, with relatively high unemployment, may be with us for a long time—unless the Federal Government elects to boost public spending still more through additional defense and public works and makes provision for increased private spending by means of substantial mid-year tax cuts.

Such moves are highly probable in an election year. A recent announcement of a \$1.3 billion boost in the 1958-59 defense program gives us a sample of future spending programs.

"Tax adjustment for small businesses is urgently needed. President Eisenhower has recommended to the Congress changes which would be a boon to small firms all over the country. I hope that these proposals will be adopted by the Congress during its present session. While general tax reduction is not now in the Administration's plans, since national defense needs have top priority, adjustments can be made in the revenue act which would be of very definite assistance to small businesses. All together, they would not be too costly to the Government in revenue and their value to the businesses affected would be many times the actual loss in revenue."

Wendell E. Barnes

Administrator, Small Business
Administration

Missing Something ?



The Answer is Pink !



Switch to ^{PINK} CIMCOOL

Yes, if you're missing that extra something, try CIMCOOL® for metal cutting jobs. Here's why CIMCOOL has become the largest selling chemical cutting fluid in the world:

CIMCOOL LOWERS COSTS because it's longer lasting in machines . . . reduces downtime and costs for cleaning and changing.

CIMCOOL PERMITS FASTER SPEEDS and feeds, because of its chemical lubricity. It combines friction reduction and cooling capacity in a degree never before attained.

CIMCOOL IS CLEANER TO USE. Doesn't soil hands or clothing, contains no skin irritants, and is safer because it leaves no slippery film. It can't smoke, can't burn, and virtually eliminates rancidity and foul odors. So don't keep things *under your hat* . . . call your CIMCOOL Distributor today. He'll be

glad to give you full information on all the advantages of the entire family of CIMCOOL Cutting Fluids. YOU may be missing something! Or write, wire, or telephone, Sales Manager, Cincinnati Milling Products Division, Cincinnati 9, Ohio.

CIMCOOL CUTTING FLUIDS

CIMCOOL 52 Concentrate—The famous pink fluid which still covers 85% of all metal cutting jobs. Effective, economical and clean.

CIMPLUS—The transparent grinding fluid with exceptional rust control. Also used for machining cast iron and as a water conditioner with CIMCOOL Concentrate.

CIMCUT Concentrates (AA, NC, SS)—For jobs requiring oil-base cutting fluids. Added to mineral oils, they give economical mixes for higher speeds and feeds.

CIMCOOL Tapping Compound — Permits the use of highest tapping speeds and increases tap life amazingly.

Also, CIMCOOL Bactericide and CIMCOOL Machine Cleaner.

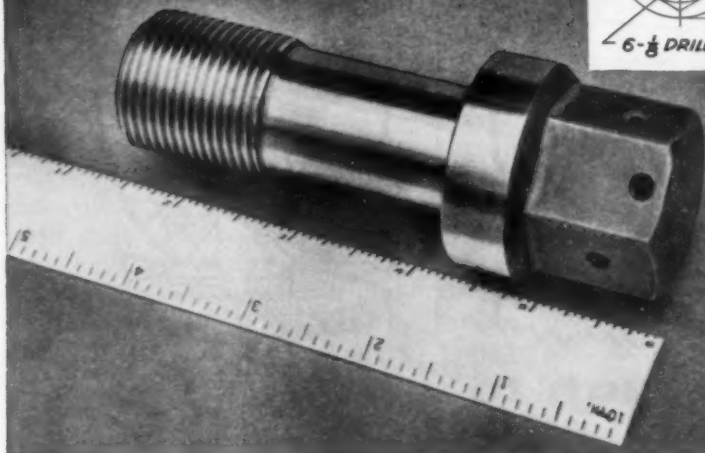
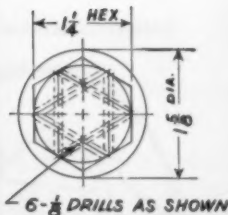


for 100% of all metal cutting jobs. The Answer is Pink!

Production-proved products of The Cincinnati Milling Machine Co.

© Trade Mark Reg. U. S. Pat. Off.

ANOTHER RYERSON PLUS: Cost-cutting ideas



Rycut 40 drills cleanly, cuts down on tool wear and breakage.

Rycut 40 alloy steel boosts production 30%, tool life 50%

Drilling piston pin bolt heads of AISI 4140 was a costly problem at Hyland Machine Co., Dayton, Ohio.

The job called for cross-drilling two holes in each face of the hex head (see diagram). A Ryerson specialist recommended new Rycut 40, the world's fastest machining alloy steel in its carbon range.

Here are the results, from Partner Forest Hyland: "We have cut down drill breakage. We have 15% fewer rejections. There is a marked improvement in finish, plus a compar-

able saving shown in milling the head of the bolt. Tool life on the automatic screw machines is 50% longer, total production is up 30%. Now we can produce this bolt at a competitive price."

There is a dependable, cost-cutting steel at Ryerson to meet every requirement. The Ryerson quality controls assure you of getting steel you can count on for dependable performance—every time. Ask your Ryerson specialist for help on your steel problems.



Hyland Machine Co. produces piston pin bolts on six-spindle automatic, using Rycut 40.



RYERSON STEEL

Member of the INLAND Steel Family

Principal products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: BOSTON • WALLINGFORD, CONN. • PHILADELPHIA
CHARLOTTE • CINCINNATI • CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE
ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Use postpaid card. Circle No. 293

**Production has a
big stake in . . .**

Quality Control



. . . Daily It Becomes More Critical

. . . says H. T. Hallowell, Jr., President, Standard Pressed Steel Co.

Q. Mr. Hallowell, a tour of your plant has convinced me that you have made quite an investment in the latest in machine tools, gaging and metallurgical testing equipment. As quality control seems to be a way of life at SPS, I'd like you to define your version of quality.

A. When you get right down to it, quality is one part determination, one part concentration and one part just plain hard work.

Quality has to be more than just a tag tied on something. An improvement must be inherent in the

product or it's not quality. Quality has become a pretty abused, over-used word. If you've got something better, you have to be able to prove it. In some cases, this is a difficult thing.

Our policy has become to furnish proof in the way of research data, test performance data, quality control data. Then we can justify and prove to the buyer that he can make a more economical purchase. The main principle of our aircraft industry is to build a higher type product. Unfortunately, present inspection methods and specifica-

"... To get reliability, it has to be a way of life."

tions in many ways are behind the times.

Q. *Aren't government specifications responsible for making Quality Control, what it is today?*

A. The whole economy is demanding better quality. In the old days, if a wheel came off a wagon, you could stop, put a nut back on and go on. Today on the superhighway, think what could happen if a sun

visor dropped and distracted the driver? A head-on collision could result. We can't afford to fix some things any more. After you set off a missile you can't fix it; you only have one chance.

Q. *Just what is needed in industry today to achieve better quality products?*

A. We need tools with minimum built-in error. Along with a machine

About H. Thomas Hollowell, Jr.

H. Thomas Hollowell, Jr., President of Standard Pressed Steel Co., a giant in the industry producing commercial, precision and aircraft fasteners and a leader in shop equipment products, is an inspiring spokesman for modern management practices.

After being graduated from Swarthmore College in 1929, he joined Standard Pressed Steel Co., Jenkintown, Pa., as a machine operator. He became general superintendent in 1930, was promoted to plant manager in 1943. In 1948 he was vice president and general manager, and he took over as president in 1951.

Economist, inventor, world traveler, Tom Hollowell urges the use of

standard products instead of special products, underscoring lower costs, greater flexibility and faster delivery. He is an advocate of the use of capital to increase productivity, controlling costs and boosting living standards. He is president of the American Standards Association.

Standard Pressed Steel Co. received the Annual Industrial Relations Achievement Award of the National Metal Trades Association in 1953 for their outstanding employee relations program. Mr. Hollowell has three times been cited for outstanding contributions to the advancement of the art and science of management. In 1957, he received an award from LaSalle College as the "outstanding man in management in the Delaware Valley."



H. T. Hallowell and Jack Goudy of SPS explain to Managing Editor Paul A. Meline (right) the manufacturing methods and precision gaging requirements necessary to produce these stainless steel nozzles for the reactor tube element used in atomic plant. Thirty of these nozzles are needed in an atomic reactor. Inspection procedures to meet the precise standards demanded by the customer include supersonic testing zygo penetrants and making sulphur molds plus all regular gaging practices.

with a consistent performance you need indicating-type gages at the machine so the worker knows at what part of the tolerance he is working. I don't like "go-no-go" gages at all. Then you put a conscientious, trained worker on the job. We have yet to see such a worker deliberately do poor work.

Q. We have incentive plans for quantity production. What about incentive plans for quality?

A. Why do you have anyone run a machine? To make parts within standards of output, size, finish and quality. One of two things happens. Either the man does the job within standards, you train him so he can

or you move him over to another job he's better suited for; otherwise you get another man.

Q. Pride in workmanship is necessary?

A. You get a man who puts a tag with his initials on the work, and at the end of the day it is just like an artist signing the painting.

You can only afford to hire good people today. We hire no experienced people. We train all our personnel. We can't afford to train mediocre personnel so we test them first. Now that's purely a management function. We can pay good people good wages, but can't afford to pay a person who's less than good, any wage.

"... We must forget the production line thinking that 98% quality is good enough."

Q. How high do standards have to be today?

A. Ivory soap or 99.44 percent purity is not good enough today. If you produce 410 parts with that quality factor you'll only get 10% good assemblies. That's not good enough. So there comes a time when you have got to consider the psychological and human side.

To get reliability, it has to be a way of life. We must forget the production line thinking that 98% is good enough; that if something comes off let the customer screw it on. We must get back to pride of craftsmanship, pride of doing a good job.

Q. Have you had to upgrade your inspection personnel to get top quality from your production line?

A. The best way to get good quality is to put the responsibility on the worker. Strange as it seems, sometimes when there is a problem in a department, we've taken all machine inspection right out and told the workers, "Look, you're responsible." But to do that you've got to give them tools and inspection equipment on each machine so they know when they're right.

Only one person can make the work right: the person running the

machine. No one else can make it right or wrong. So, the most important person you have when it comes to quality is the person at the point of operation.

A medium sized thread rolling machine might cost \$15- to \$20-thousand today. But management today must be sufficiently enlightened to be willing to spend from \$100 to \$500 in measuring equipment for the machine to control it. In one day or one hour or even minutes, in many cases, you can make \$500 worth of scrap on that machine if it is wrong. The lack of such measuring equipment is what often causes management to complain that tolerances are too close, the workers are stupid and machines no good.

The measuring equipment has got to be at the machine to help the operator perform his job within the size range he has in his standard.

Q. I understand you use statistical quality control on the production floor only temporarily to help overcome a particularly knotty problem, and concentrate this type of control in final stores receiving inspection. Why is this?

A. Look at it this way. You don't have a person around your place if



Testing apparatus and inspection devices available to Cold Header Operator Pat Fiorelli include length, pitch diameter, functional and "go-not go" gages and the broach plug he's holding in his hand. President Hallowell points out that one out of every 30 of these broached parts are inspected.

he is stealing. So you don't have a person around who constantly makes parts to a wrong size. Either get him in the groove, transfer him or get rid of him.

Q. A common expression made by some employers a year or so ago was that a little unemployment might be a good thing as handling personnel was a pretty tough problem. What have you to say about this?

A. People are people. Generally, they reflect management's attitudes. It starts with management. If they want the work right, they've got

to help the workers. Many times I can say that workers work for management. But many times I find I'm really working for the men in the plant.

If those men are having a problem with producing good work with their machine, we've got to get them out of that trouble, so we're really working for the workers. If we have a tool that won't produce or won't come within standards, the only way we, as a company, are going to solve that problem is for management to get

"... Cost savings resulting from engineering work in the standards

on the job and get that problem solved—change the process or tooling. Maybe the solution is to educate the customer. Maybe he doesn't need that crazy tolerance he's asking for.



Comparator type gage in which the contour of the threads is magnified for check.

Q. How far can a company representative go in educating the customer?

A. A great number of young engineers today have not had the benefit of much practical experience. We find some ridiculous requirements that are completely unnecessary. On the one hand, we find ridiculously close tolerances; at other places, due to engineers' inex-

perience, we find tolerances much too wide, much wider than they can afford.

Often we show customers that with closer tolerances they will have less trouble with assemblies. But then we find a man specifying 1/10 of a thousandth when one thousandth was close enough. We learn and they learn by this contact with customers. We're training their people, they're training ours.

We have what we call a road show production in which we exhibit with films and charts our latest thinking on tooling and production. During the question and answer period we keep acquainted with what problems in aircraft, missiles and other industries will be tomorrow. Our research has to be aimed and guided to work on problems that will provide answers for tomorrow's situations. That's how we find out what the problems are that they're working on. We spend over \$1-million a year on research and development. About 25 percent of the products we now are producing we weren't making five years ago.

Q. You're a strong advocate of standards. What is the situation today regarding standardization activities in industry?

A. The situation today is that some

field are just astronomical."

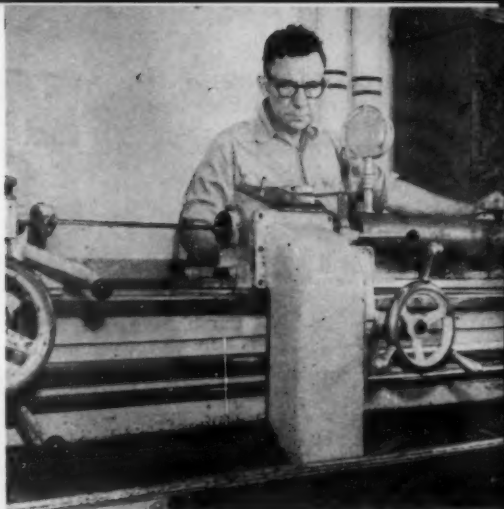
engineers can design a contraption that will do anything we want it to do. But it will have too many parts, special parts and the cost will be quite high. Now by putting several more man years in design and working out details many times we find we can cut the number of parts in half and use standard parts. Cost saving resulting from engineering work in the standards field are just astronomical.

But management today wants to save money. They're cutting down on standardization activities, at a time when they have the smart fellows available to work out these problems and develop better and more economical standards.

Q. With more and more missile projects to be contracted for, where will the small shop fit in as a subcontractor?

A. It's very expensive to find out about these new high strength metals. It takes the most modern type of machine tools, takes a completely integrated organization to do many of these jobs that can't be jobbed out.

If we have a problem with metals, we bring in our metallurgist; if it's a quality problem, the quality control boys work on it. If it's materials or tools, we get those



First of many precision operations in the production of specialized studs by SPS is the deep hole drilling to accommodate a heating unit. Studs are subjected to continual minute inspection by a battery of instruments: optical comparators, dial indicating micrometers, ring gages and super micrometers. Metallurgical inspection of finished products determines yield strength, ultimate strength, fatigue strength, Rockwell hardness and finish.

men on it. Personally, I don't see how it is going to be possible to put some of these missile jobs out in the small shops.

Q. More advanced thinking is needed all around? More emphasis on reliability?

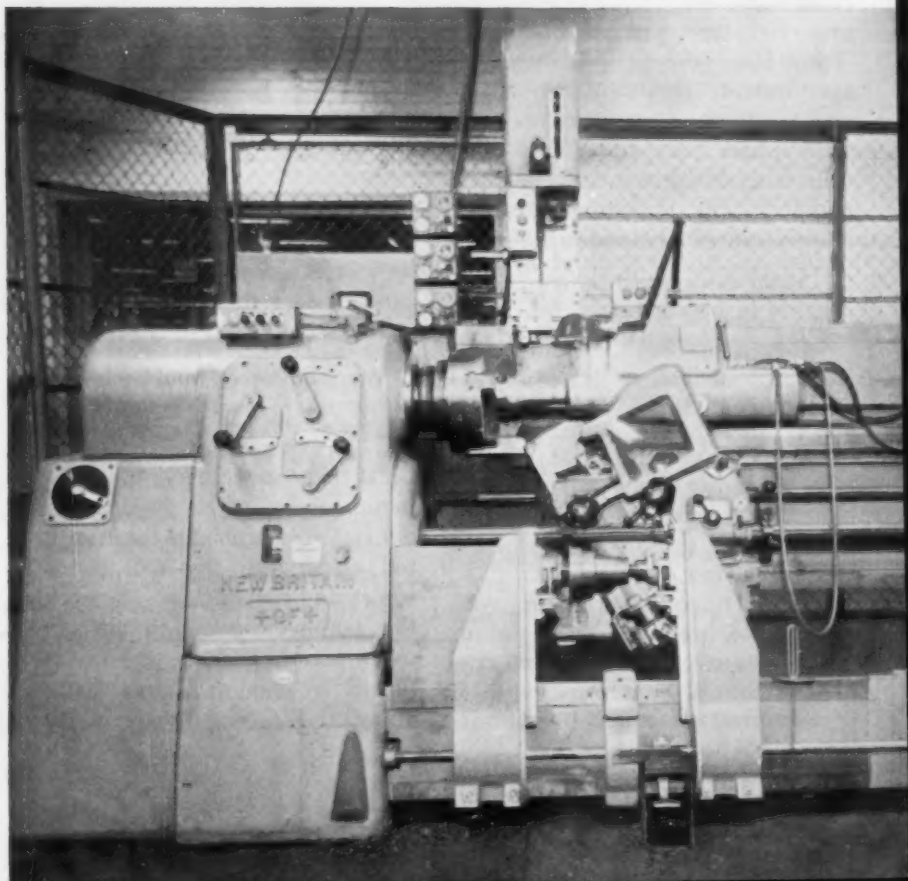
A. It takes management, an investment, training of people, psychology, research and the coordinated effort and the will to make something better. This is something this country's going to hear a lot more about, and we are going to do all we can at SPS to bring it about.

• • •

By **Charles E. Glazier**
Senior Methods Engineer
Allison Division
General Motors Corp.

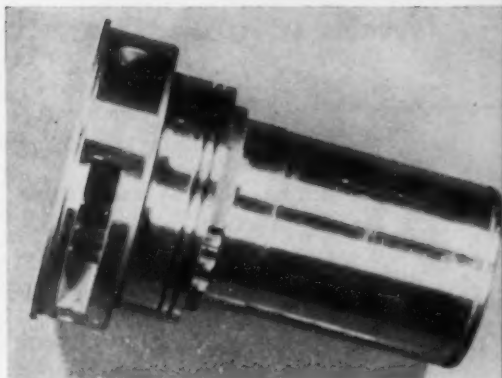
Cutting Costs on Turning

- Each tracer lathe replaces four turret type lathes
- Single-spindle chucksers displace five turret lathes
- Addition of hydraulic equipment enables one man to operate two turret lathes



g Operations

at Allison



2. Sleeves such as this are among products machined economically on tracer lathes. For such parts, an air operated chuck is employed but many other parts are turned on centers.

● Products of the Allison Division, General Motors, include a large variety of transmissions. These, among other products, are seldom produced in long runs. It follows that machining must be conducted on a job shop basis, handling mostly small batches. There is constant effort, however, to promote economy by selecting the most adaptable general purpose tools and equipping them for rapid setup.

Among parts needed in small batches but involving a large volume, are more than 250 different transmission shafts.

1. One of several tracer lathes now employed by Allison to replace turret lathes. In the setup shown, an air operated chuck is applied. In most setups on lathes of this type, however, the work piece is mounted on centers.

Tracer lathes of the type shown in Fig. 1, but equipped with centers in most cases, are applied effectively because they reduce operator effort, improve quality, require minimum floor space and lower tool costs. Considerable effort has been

expended, however, to achieve other benefits through maximum machine utilization.

One aim has been to standardize, as far as practical, on materials, design and processing, so as to reduce the number of variables. For products to be turned, operations include: sawing stock to length, normalizing it, facing and centering, rough turning, heat-treating and finish turning. Secondary operations include grinding (including snap ring grooves), hobbing and threading, among others.

Normalizing affords tool economy, especially where the stock to be removed is large. It has been found, however, that precision grooving on tracer lathes is not economical because tool adjust-

ment time is excessive and detracts from the primary advantage of equipment designed for turning operations. Parts design has been standardized for grinding reliefs and to form oil grooves largely because this decreases the time needed to complete secondary operations.

Besides turning shafts, tracer lathes are used advantageously to turn sleeves (see Fig. 2) as a preliminary to grinding. For such work, the lathes are equipped with air chucks, as in Fig. 1. For many jobs, tracer lathes have proved to be about four times as fast as turret lathes. Although one or more templates have to be made for each piece turned in tracer lathes, except where a previously machined



1. BEFORE: Each turret lathe required a full time operator.

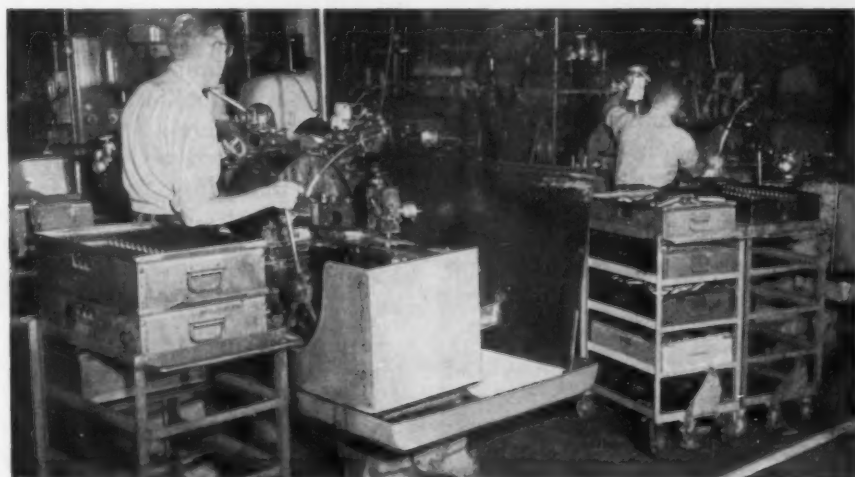
piece is used in place of a template, setup time, in a typical case, is only 15 minutes as against four hours for the turret lathe. Hence, the cost of templates, when they are needed, is quickly offset in setup time. These savings are repeated, of course, each time the setup has to be made. When you add the savings for faster production plus lower tooling and grinding costs, the total saving is significant.

It should not be concluded, however, that turret lathes have lost their utility by any means. They can perform many operations in a single setup both on internal and on external surfaces, including some for which tracer lathes are not adaptable.

Ways of reducing manpower requirements for turret lathe work are being found and this

has cut the cost per piece substantially.

One way in which this has been accomplished is to make the cycle automatic save for loading and unloading. This has been done on machines like the two shown in Figs. 3 and 4 by equipping them with Lynn hydraulic units that operate both the turret and the crossslide. In such setups, after hand loading the work piece (such as blower shafts for a Diesel engine), the operator presses a button to start the machining cycle. He then leaves the machine to run through its cycle while he unloads and reloads another machine of the same type equipped with similar hydraulic units. If internal threads are required, a reversing tapper is applied and no separate tapping machine is needed.



4. WITH LYNN HYDRAULIC UNITS one man operates two turret lathes.



5. Single-spindle chuckers of this type are now used by Allison. In general, such chuckers replace five turret lathes formerly used for the same work.

Use of one operator for two machines halves the labor charge for the pieces on both machines, not including that for setup.

In some cases, the setup is such that the work piece can be shifted by hand, end for end, after one end has been completed. In one instance, turret lathe was so altered that the turret pushed the carriage and, with the correct combination of turret and crossslide feeds, a tool on the crossslide machined an external taper that formerly required a separate engine lathe operation.

Many parts formerly processed on turret lathes are now machined on single spindle chuckers as in Fig. 5.

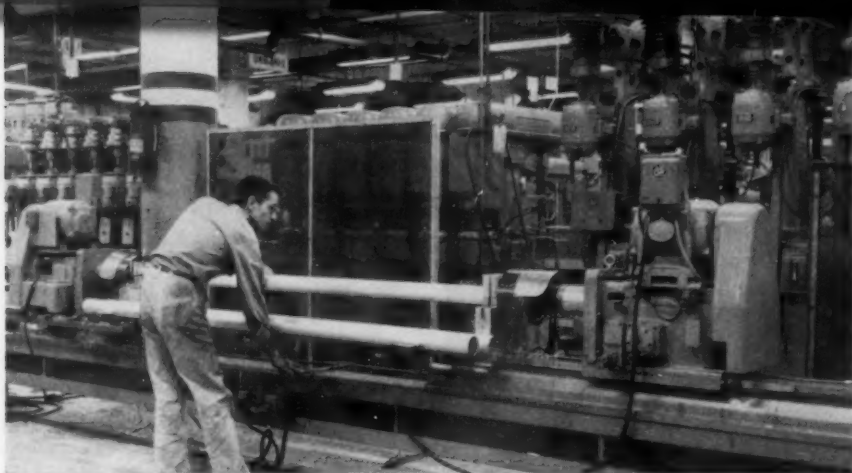
Because these chuckers are auto-

matic, save for loading and unloading, they effect sizable labor economies. In the close grouping practiced, one man easily can operate more than one machine. By having the machines closely grouped, tooling costs are lowered, partly because much of the tooling is interchangeable from job to job.

Concentrating operator know-how and skills by having the machines grouped has worked out well at Allison. Floor space is less, scheduling is simplified and, by grouping parts of similar type, setup costs are lowered. By selecting single-spindle chuckers of the type now used, it was possible to apply much of the turret lathe tooling formerly employed and so avoid a large part of the cost that entirely new tooling would have necessitated.

Much development has made possible the maximum use of standard throw-away tool inserts. Standard holders for throw-away inserts have been altered so as to use more different throw-away inserts. This has almost eliminated special tooling, and has also reduced tool change time by more than 50 per cent.

Experience gained with the single-spindle chuckers has shown that each such machine can replace five conventional turret lathes for the types of parts that the chuckers now handle. • • •



Rocket tube boring machine. Both ends of tube can be machined at same time.

Faster Facing and Boring . . .

● A problem facing Chance Vought Aircraft, Inc. was to speed up the facing and boring of one end of a 10-foot rocket tube and face the other end so a plug could be welded to it. Five minutes per tube on a turret lathe was too slow.

A machine was developed to hold the

tubes in an air clamp while both ends were bored out in 30 seconds.

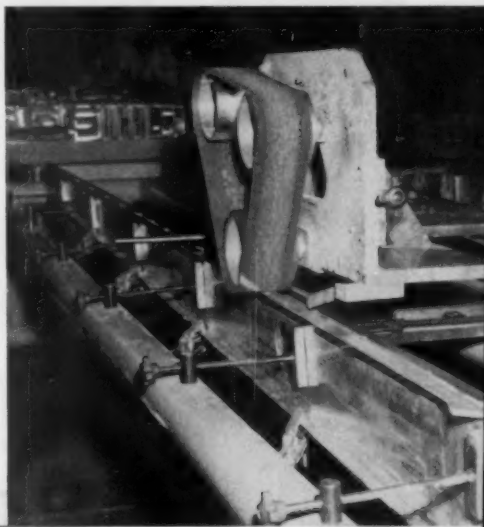
The F8U-1 Crusader's wing needed a perfectly flat seal for the wing's skin. From parts salvaged around the plant, a sanding machine was built to keep cresting below 1/1000th-in. Operation was increased 400 percent. ● ● ●

Sanding machine (guard removed) for sanding wing beams.

. . . Hand Filing

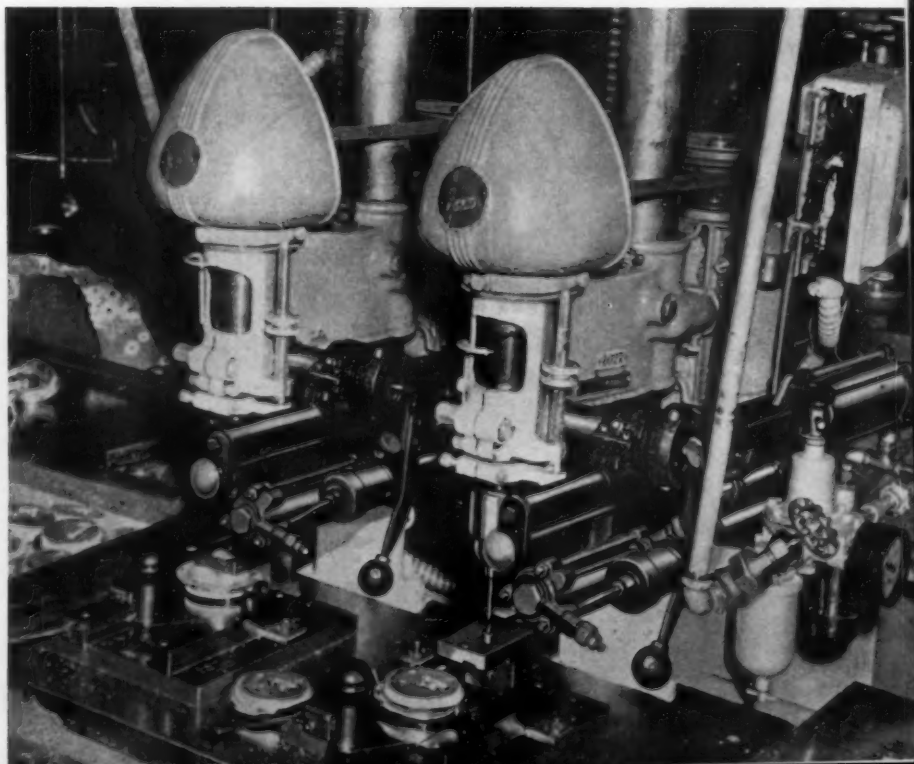
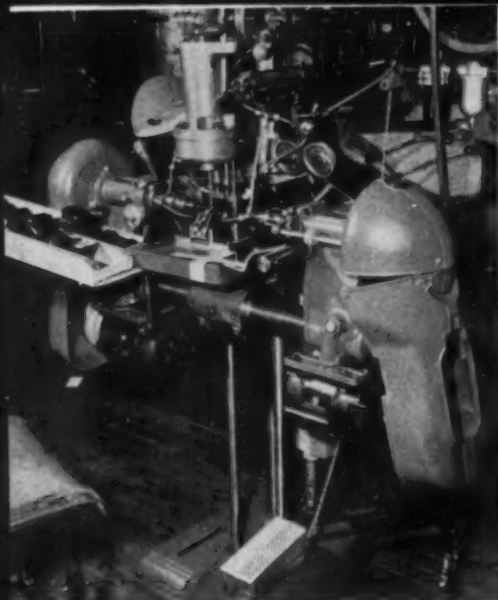
Eliminated

at Chance Vought



Mechanizing

With four holes to drill in three different sides of a camera flash unit housing, Ansco engineers substituted this inverted "T" arrangement of three Delta drill presses actuated by pneumatic controls for the tumble jig previously used with three separate drill presses. Results: a sevenfold increase, from 585 to 4000 parts in an eight hour day. Actuated by one foot pedal, the three drills act simultaneously. Exhaust air from the spindle feeds blows away chips.



Drill Press Set-ups

with Pneumatic Controls


Laborious drilling work can be made semi-automatic or automatic and individual operations may be combined by equipping standard drill presses and drill press heads with pneumatic controls for spindle feed and for indexing, positioning and clamping the work.

By **Ben Eldridge**, metal products manager
Delta Power Tool Division
Rockwell Manufacturing Company
and

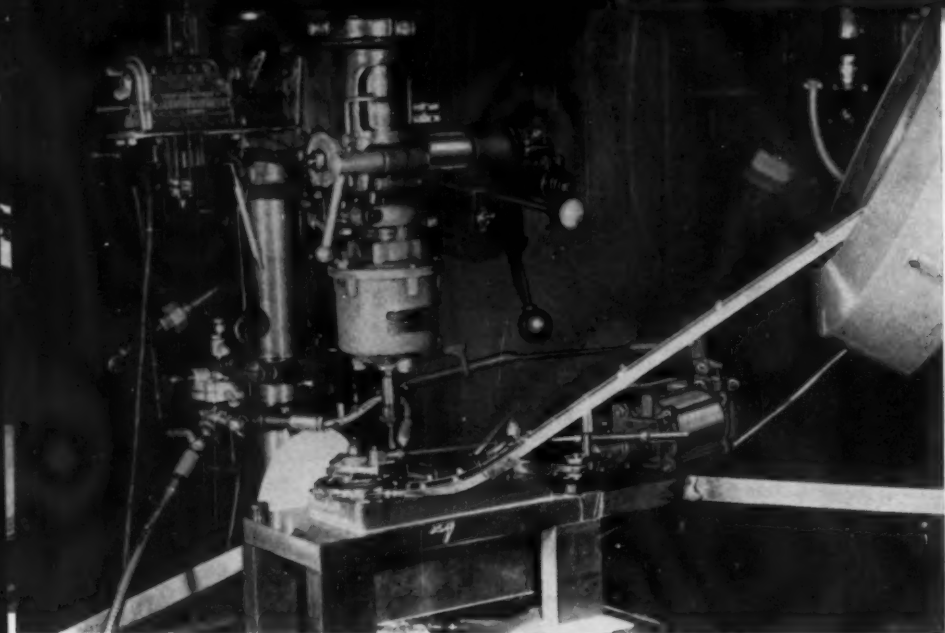
J. L. Fisher, Jr., chief engineer
The Bellows Company

● In both pneumatically controlled drill press setups and complex machines designed for automated production operations, various operations are performed simultaneously or in a predetermined sequence automatically and the work may be transferred between operations.

As a compact tool that provides a stable work surface, multiple speeds, up-and-down movement of the cutting tool and ability to run at any angle, the drill press can be adapted to a great variety of special or awkward drilling jobs. It can also be used in special setups with grinding and polishing wheels and milling and routing cutters as well as for drilling and tapping operations like those shown in photos.



Equipped with pneumatic power feed two drill presses finish ream two holes in 200 record-changer cams per hour. One girl now handles both machines. Previously, two girls, using hand feed, averaged 130 pieces per hour. Now, operator simply loads, trips feed lever and unloads fixture. Output is up 50 per cent, labor cost down 65 per cent.



Revolving hopper spills discs onto a track leading to a Bellows rotary table. An air power spindle feed, controlled to operate as the table is indexed, and an air motor to clamp the work made this tapping operation completely automatic, boosting output from 1750 to 2500 pieces per hour, a 43 per cent gain.

PNEUMATIC CONTROLS continued

Pneumatic controls provide compact, easily-set devices for governing spindle travel and work movement accurately. Flexibility is a major advantage in use of pneumatic controls in drilling operations. The extent of automatic control may always be governed by savings involved.

Use of an automatically indexed rotary table and automatic spindle feed usually makes an operation machine paced.

The operator need only load and unload the workholding jigs. In one

such setup three holes are drilled in a part simultaneously by use of multiple spindle attachments on a Delta drill press. The rotary table holds six jigs and an air motor clamp in each piece as it comes under the drill head. The drill press air power feed, the rotary table and the clamping unit are all synchronized to work continuously and automatically. This setup is more than twice as fast as manual drilling of the holes one at a time.

Pneumatic controls are effective on multiple-spindle drill

ALL THE PRODUCTION YOU'LL EVER WANT — ALL THE PRECISION YOU'LL EVER NEED



BUT MY WORK INCLUDES
THE MANUFACTURE OF—

I KNOW!
AND YOU CANNOT
POSSIBLY BUY A BETTER
MACHINE FOR THE JOB
THAN—



THE HAMILTON No. 1-B PRECISION
SMALL GEAR HOBBIING MACHINE



INVESTIGATE IT!
YOU'LL SEE!



ASK
for our gear hobber
literature packet No. GH-740



2584

Hamilton

PRECISION SMALL-GEAR HOBBIING MACHINE

THESE ARE REPRESENTATIVE USERS OF HAMILTON GEAR HOBBIING EQUIPMENT

AirResearch Manufacturing Co. • Duncan Electric Co. • Bendix Aviation Corp. • Victor Adding Machine Co. • Lear, Co. •
Minneapolis-Honeywell Regulator Co. • Geophysical Machine Works • Hughes Aircraft Co. • Westinghouse Electric Corp. •
Rockwell Meters, Inc. • Borg Products Division • Herschede Hall Clock Co. • U. S. Navy Electronics Laboratory • Redstone
Arsenal • Smallwood & Son Machine Co. • Link Aviation, Inc. • Bell Aircraft • General Mills • Elgin National Watch Co. •
U. S. Naval Gun Factory • Grimes Manufacturing Co. • Texas Instruments, Inc. • McDonnell Aircraft Co. • American Machine
& Metals • Stromberg-Carlson Co. • Hamilton Standard • U. S. Gauge Co. • Western Gear Works • Schlumberger Well
Surveying Corp. • Douglas Aircraft.

THE HAMILTON TOOL COMPANY • 826 SOUTH NINTH STREET • HAMILTON, OHIO

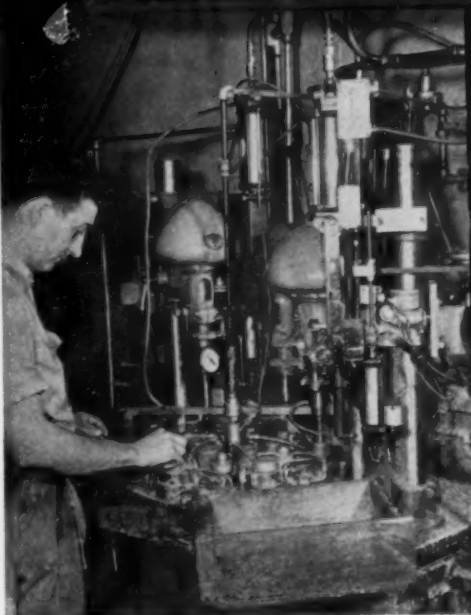
Use postpaid card. Circle No. 294

presses because they permit one operator to control two or more spindles.

For example, automatic spindle feed devices on a two-spindle machine—used for reaming two holes in a die cast cam for a phonograph record changing mechanism—increased output 50 per cent. But at the same time, direct labor costs were halved because one girl could load the jig for the second spindle while the first was reaming.

All handling between operations is eliminated when pneumatic devices are used to control two or more drill presses in a sequence of operations while the part is held in a single jig.

One way to do this is to station three drill presses around a rotary table with the parts held in jigs on the table. This was done to drill a deep hole to close tolerances in beryllium-copper electrical connector sockets at Precision Products Division, Ostby and Barton Company, Providence. To maintain uniform thickness of the walls of the cylindrical part, the 0.0209 inch hole had to be drilled to plus 0.004 and minus 0.002 inch tolerances in a half-inch depth. Three Delta drill presses equipped with pneumatic drill press feeds were stationed around a Bellows rotary feed table with eight fixtures. The work pieces are placed in the fixture and auto-



Three drill presses stationed around a rotary table eliminate all handling between steps. The piece, a cylindrical part to be deep drilled to close tolerances, is set in one of eight fixtures. The first drill press centers it, the second drills the hole to half depth and the third finishes the job. Output has risen from 250 per hour on the turret lathe to 1380 per hour.

matically progress through the three drill press stations. The first drill press centers the piece; the second drills the hole to half-depth and the third completes the job. After the third operation a blast of air removes the piece from the fixture.

Prior to using the 3-drill press and rotary table setup, Precision Products drilled the holes on a turret lathe, but output was only 250 per hour and rejects were high. Now, output has risen to 1380 per hour and rejects have been virtually



A portable, height adjustable, steel table-truck-work bench! Used for die transfer, machine feeding, assembly (at best height, in best light). For lifting, lowering, transport of all compact, heavy loads. Saves "handling" accidents to both men and materials. Saves minutes for men wherever used.

Write*
for NEW, FREE Bulletin
No. P-2408



IT'S A
Hamilton Tool
USE IT WITH CONFIDENCE

2408



ADDRESS

Recent changes and additions provide many bonus features.

Unobstructed perimeter
(work from any side!)

Six
Wheel
Models



Capacities to 5,000 pounds.

PORTELVATOR
The Handy HAMILTON Portable, Elevating Table

3 table surfaces
4 point support

Four
Wheel
Models



Special
Designs
tool

More Service
for Less Money than
Any other unit of equipment

THE HAMILTON TOOL COMPANY
826 South Ninth Street
HAMILTON, OHIO

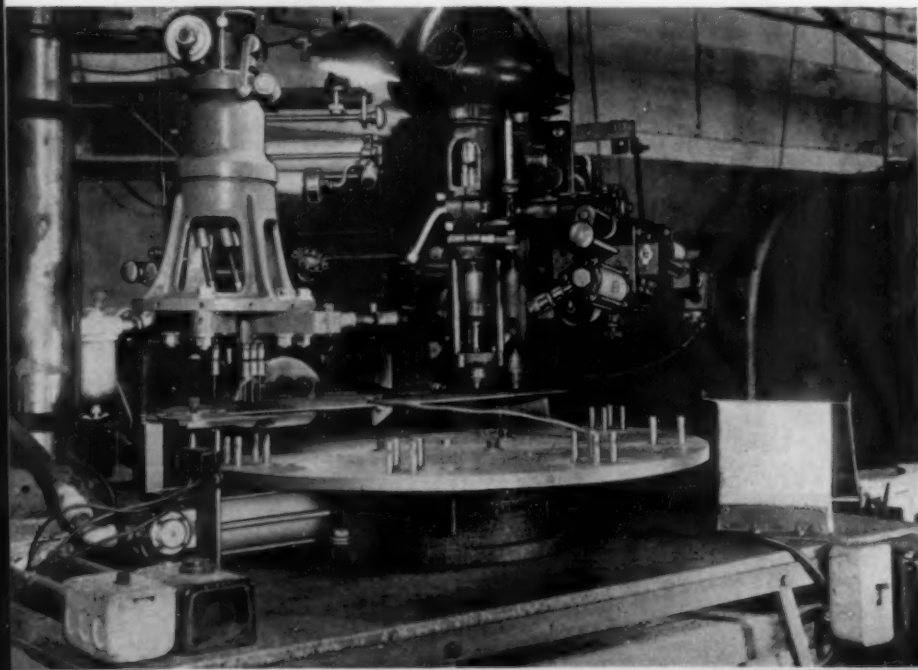
eliminated. Over three million parts have been run in this setup.

Drill presses may also be set with pneumatic controls for simultaneous drilling of two or more holes.

The Gale Products Company, Galesburg, Ill., uses five Delta drill presses, mounted horizontally, to drill three holes and counterbore two others in a drive shaft tube only 1½ inches in diameter and 12¼ inches long.

The machine, consisting of the five drill presses arranged around a workholding fixture, is simple to load and operate. The fixture is a right angle block with a locating plug that assures correct positioning and a toggle hand clamp to hold the tube during drilling. The operator simply places a tube in the fixture and trips a switch. All five drill heads, each at the correct speed and feed, complete the operations and return to the starting position. 400 shafts are drilled per hour. . . .

Cost of drilling eight holes in a phenolic plastic part was reduced 20 per cent as production rose from 100 per hour (manual operation, two operators) to 650 (one operator). Six holes are drilled vertically and two horizontally. First drill press, with multiple head attachment drills five holes; second (not visible in picture) drills two horizontally; third drills eighth hole vertically. Air blast unloads the part from fourth station.





Precision TAPPING OF THIN AND BRITTLE MATERIALS

Recent design change provides a simple homing device as a standard component of the

**HAMILTON
SUPER SENSITIVE, SMALL-HOLE
PRECISION
TAPPING MACHINE**

and makes routine of such problem work as the tapping of precision holes in thin metal sheets or in brittle plastics. Even improves performance in the tapping of blind holes!

YOU

will want full information about this important development!

WE WILL FURNISH IT

FREE

ask for

BULLETIN No. 2463

ADDRESS

**THE HAMILTON TOOL COMPANY
826 South Ninth Street
HAMILTON, OHIO**



IT'S A

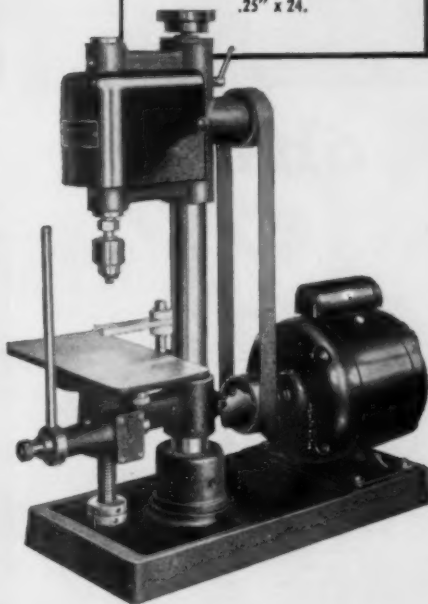
Hamilton Tool

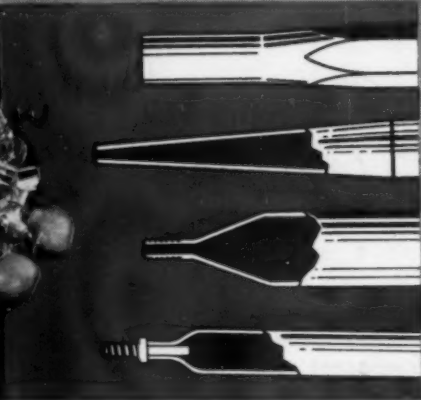
USE IT WITH CONFIDENCE

Use postpaid card. Circle No. 297

Hamilton Super Sensitive, Small-Hole,
Precision Tapping Machine.

Capacity — .034" x 120 to
.25" x 24.





chips...or parts

Fenn rotary swaging can have an important role in reducing the cost of your product . . . and making it better. This modern method of chipless part making is fast, versatile, accurate (to $\pm .001''$) . . . saves money and metal. Plenty of it! You save in capital investment, labor, material and time. Here's an example—A precision shaft was formerly made from a five piece assembly at a cost of \$130.00. Now, swaged from tubing, it costs \$20.00 . . . a savings of 85%. To be sure that you are not paying for chips instead of parts, look into Fenn Rotary Swaging. Write for catalog SM58.

**Which are you
paying for?**

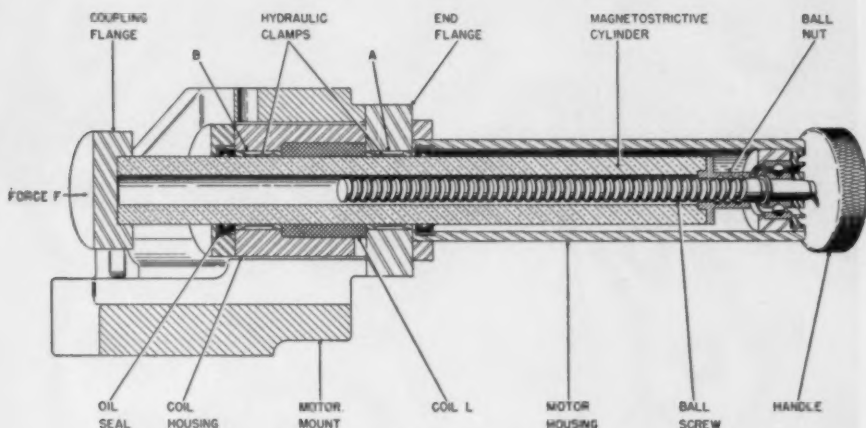


Sets the Pace
IN ROTARY SWAGING

THE FENN MFG. CO., 902 FENN ROAD, NEWINGTON, CONN.

Use postpaid card. Circle No. 296

Controlling Grinding Feeds . . .



Cutaway view of Inchworm motor.

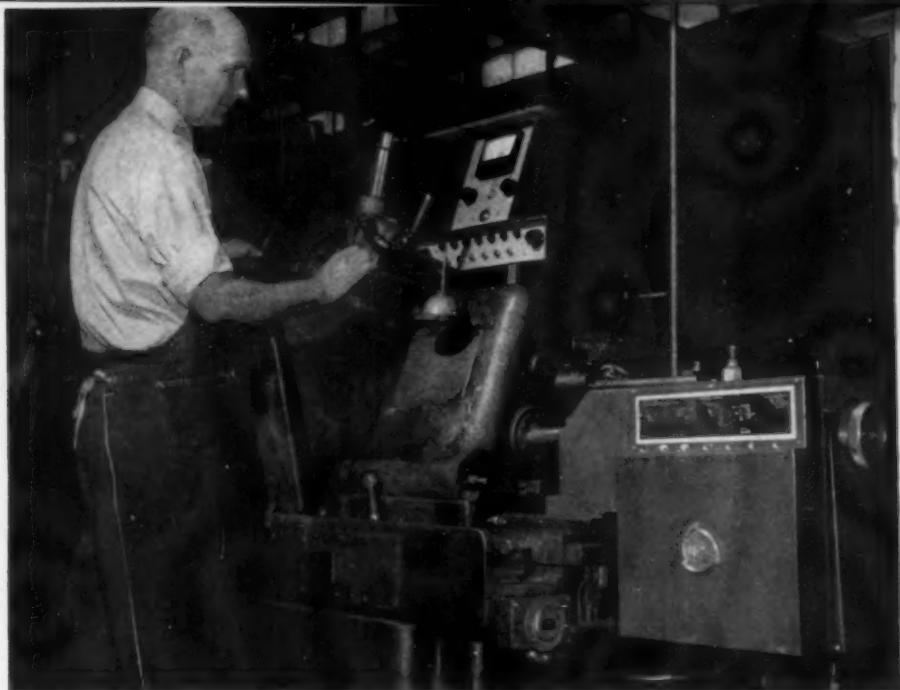
. . . to Micro-inches

In the Torrington Company plant, an electronic actuator corrects mechanical and human errors in the centerless grinding operation on precision anti-friction bearings before assembly.

● To improve the control of their centerless grinding action in the manufacturing of precision anti-friction bearings, the Torrington Company removed the lead screw

of the grinder and replaced it with a device called an Inchworm motor. This linear actuator, a development of Airborne Instruments Laboratory, Mineola, N.Y., uses a principle called "magnetostriction" to achieve precise movements of heavy loads over minute distances.

The base of the motor is bolted to the bed of the grinder, and the magnetostrictive armature is attached to the wheel slide. Thus, movement of the armature through the clamps moves the wheel slide backward or forward as desired.



Torrington Needle Bearing plant has Inchworm installation on centerless.

CONTROLLED GRINDING continued

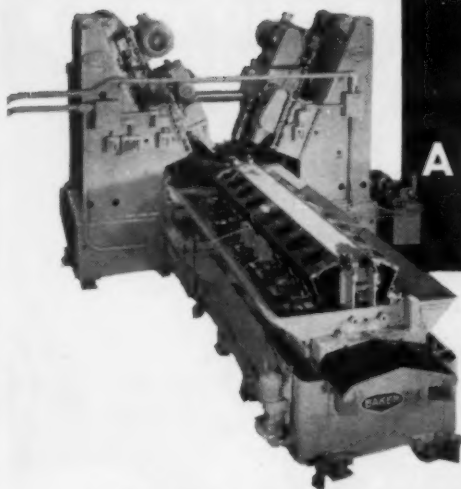
The minute movements can be as small as five millionths of an inch, or as "large" as one hundred millionth.

The unit is pushbutton-controlled by the machine operator. Electronic gaging equipment accurately determines when a wheel adjustment is necessary and transmits the necessary "instructions" to the control mechanism.

The complete system operates in this way: as each part is ground, its size is automatically measured to within a few millionths of an

inch, and the measured size is automatically compared to the desired size. If the measured size of the part is different from the desired size, the information is transmitted to an "electronic brain" which decides whether the wheel slide position should be corrected, in which direction, and by how much.

It decides that no correction should be made if only one part is the wrong size. If successive parts are of the wrong size, however, the brain will make the necessary correction. . . .

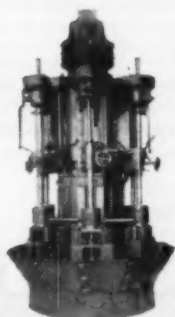


NEW BAKER SPECIAL

bores diesel engine cylinder blocks — automatically

The latest of a long line of Baker special machine tools . . . operations are rough and finish bore and counterbore 6 to 16 holes for cylinder sleeves; drill dowel pin holes.

Compare with the early Baker special "Rotary" below — the *man* walked around the *machine*!



BAKER BROTHERS, INC.
Dept. MT-48 Toledo 10, Ohio

Send me data on automation with . . .

☐ Baker Specials ☐ Baker standard machines

NAME AND TITLE _____

COMPANY _____

ADDRESS _____

CITY _____

ZONE _____ STATE _____

Use postpaid card. Circle No. 322

First

COMPLETE LINE OF STANDARD END MILLS for ALUMINUM



For further information on
Putnam End Mills for Alumi-
num, write for Catalog 457.



Again **PUTNAM LEADS . . .**

Standard End Mills . . . For the first time you can select from a complete line of standard end mills designed specifically for milling aluminum . . . Putnam stocks 185 standard types and sizes.

New Designs . . . These standard end mills have been developed through years of research and experience on aluminum applications. Over a year ago, Putnam introduced the first standard end mills designed for milling of aluminum. Today, no other manufacturer offers as complete a line of standard end mills for aluminum.

Contact your Putnam Distributor for personalized service,
quick delivery of the finest standard end mills for aluminum.



PUTNAM

TOOL COMPANY

2981 CHARLEVOIX AVENUE • DETROIT 7, MICHIGAN

Use postpaid card. Circle No. 298



End circumferential seam on a single-course annealing cover is welded as the 56 inch diameter cylinder is rotated under the semi-automatic welding head. Flux recovery hose may be seen on the boom carrying the welding unit.

Welding Head on 20 ft. Boom Traverses Large Tank Seams

By **James Angus**
General Foreman, Welding Shop
Weirton Steel Company

• Automatic submerged arc welding of longitudinal and 'round-about seams on inner covers of annealing furnaces for coiled strip steel, along with similar tank-type welding, are handled by a novel arrangement in the Weirton maintenance shop. It involves the use of a lengthy boom, at one end of which is mounted a "Squirt" welding gun of the Lincoln ML-2 type, with a suitable carriage at the other end for raising, lowering, advancing or retracting the boom. These are tied in with a drive

motor for rotating the work.

Illustrations herewith show the work in progress, one setup being a "double-course" cover, 160 inches long, 56 inches in diameter, and of 5/16 inch plate. The second is a single-course cover, 118 inches long and of the same diameter and plate thickness. The identical setup has been used on stainless steel (19-9 chrome-nickel) tanks of similar size.

It has been determined that, on work of this type, both inside and outside welds are necessary, with 100% penetration and no porosity. Welded covers are sampled 10% for nick-and-break tests on both lengthwise and 'round-

WELDING HEAD continued

about seams. Results have been highly favorable, and the assemblies are being completed in about one-quarter of the time involved in manual welding.

These units are welded with an inside pass at 400 amperes, 30 arc volts and speed of 20 inches per minute, straight polarity. Outside pass is at 450 amperes, 31 volts and at 12 inches per minute, positive polarity. Electrode wire is mild steel, Lincoln L-60, with a type 840 neutral granular flux. When welding stainless steel, a 19-9 Cr-Ni core wire is employed with a neutral flux.

The welding head or "gun" is attached to the body of a gas-cutting torch, in turn mounted on a length of pipe carried by the boom. Flux cone is, of course, integral with the electrode wire nozzle, the entire unit being ad-

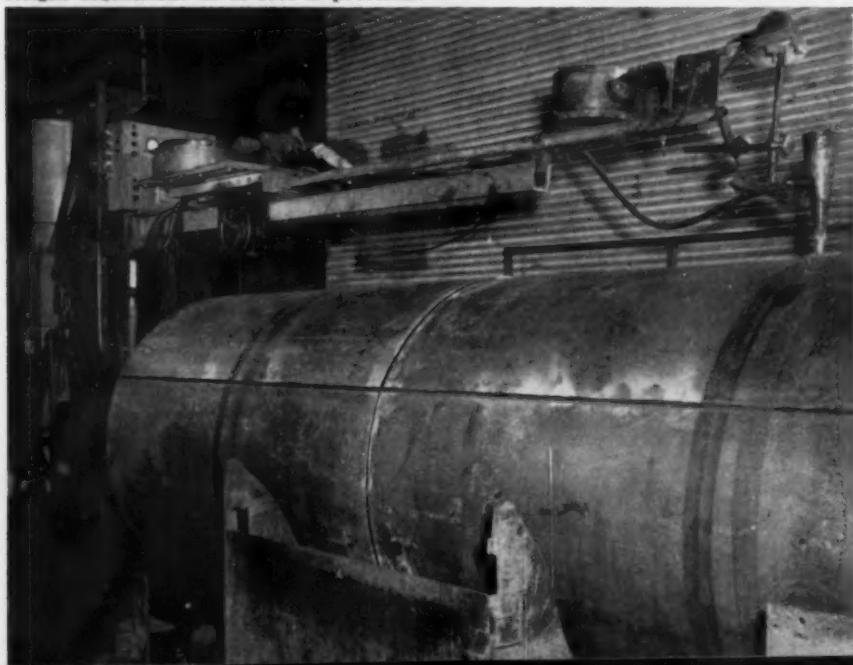
justable in three directions for accurate positioning. The pipe itself can be moved in or out by a handwheel along the box section boom, a distance of 4 feet; thereby, providing a maximum reach of 20 feet from the carriage support post. The carriage has a height adjustment of 12 feet. The welding head may be traversed along longitudinal seams at speeds of from 4 to 60 inches per minute. For 'round-about work, the tank is turned by means of rubber-covered power rollers on which it rests.

A vacuum flux recovery system is attached to the carriage, with sufficient length of exhaust hose to reach well beyond the furthest point of travel.

Complete fixturing for the setup was designed and built in Weirton shops.

• • •

Double-course cover is 160 inches long and is easily welded by the 20 foot extension boom which is traversed by the carriage mechanism, at the left, at speeds of 4-60 inches per minute. Height adjustment of 12 feet is provided.



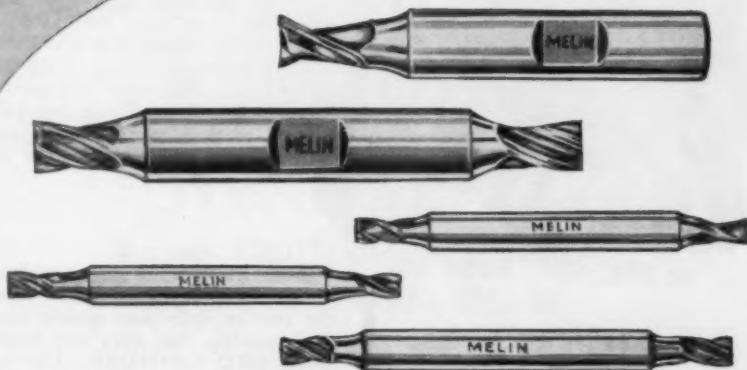
MELIN

STUB LENGTH END MILLS

with flutes shorter than regular

Offer **GREATER STRENGTH...**★

TWO, THREE AND FOUR FLUTE



...★ *Plus an Exclusive* ... In addition to manufacturing a complete line of End Mills, the Melin Tool Company makes several standard Stub Length Mills exclusive of other tool manufacturers.

The new Melin Tool Catalog No. 54-C lists the specifications on these all inclusive Stub Length Tools ... and ... they offer greater strength and less breakage. Write for your catalog ... today.

Representatives in Principal Cities

**MELIN TOOL
COMPANY, INC.**

3374 West 140th Street
Cleveland 11, Ohio



Use postpaid card. Circle No. 299



"most used grinder" say customers

**WET
or DRY Model MG**

PARTIAL SPECIFICATIONS—

Capacity — 8" x 12" x 12".

Table travel — 13", traverse $8\frac{3}{4}$ ".

Vertical clearance 12" under 7" wheel.

Standard grinding wheel—7" x $1\frac{1}{2}$ ", $1\frac{1}{4}$ " hole.

Spindle speed approx. 3000 RPM.

Motor, $\frac{1}{2}$ HP, single or 3 ph., dynamically balanced.

Floor space—45" x 38" x 62" high.

Net wt. with stand approx. 630 lbs.

In checking with the tool, die, gage and general production shops that use SANFORD SURFACE GRINDERS, the most frequent comment was that Sanford Grinders were the "most used" of any grinders in the shop.

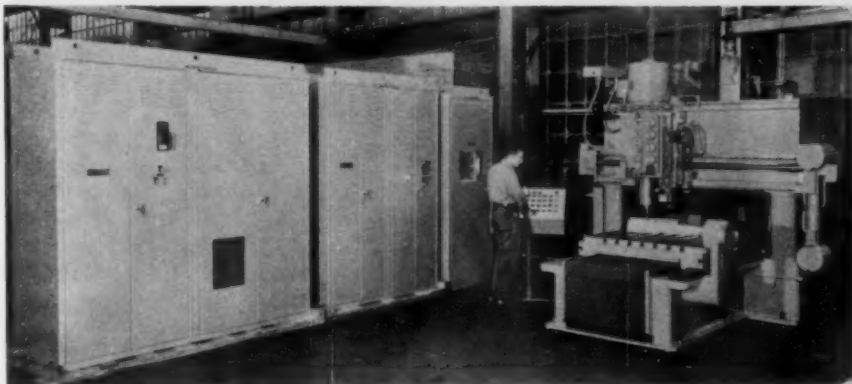
Others have tried to copy but there's a "feel" that comes from the precise individual quality and workmanship that goes into every SANFORD GRINDER. It's the factor that can't be found in any other grinder.

So widely used you can ask users in your own area how they like the low priced Sanford Surface Grinder.

Write for illustrated and fully descriptive literature, reconditioning facilities, optional equipment and prices.

Representatives in major industrial areas

SANFORD MANUFACTURING CORP.
1026 Commerce Ave., Union, N. J.



Tape Controlled Milling for the Small Plant

ASTORIA, L.I.—A new magnetic tape-controlled profile and contour milling machine designed to make automation of small quantity production economically feasible has been developed by the Morey Machinery Company, Astoria, L.I., and General Electric's Specialty Control Department, Waynesboro, Virginia.

To machine precision aircraft parts from ferrous and non-ferrous metals, the tailor-made, three-motion magnetic tape control system automatically directs vertical, horizontal and longitudinal milling at rates up to 100 inches per minute and at tolerances as low as .001 inches. Similar tolerances are pos-

sible at traverse of 200 inches per minute.

"This high-precision miller and electronic control are now available for small lot production at a price the small and medium-sized plant can afford," according to President Leonard Morey of Morey Machinery Company.

Dr. L. T. Rader, general manager of the Specialty Control Department, estimated that "users of this new electronically-controlled milling machine may expect manufacturing cost reductions of 35 to 69 percent and savings in production time of at least 50 percent."

The machine is capable of handling heat-treated tool steels as well as alumi-

continued

num, magnesium, and similar metals as large as 48" by 48" by 12". Since feed motions of all three axes are numerically controlled from magnetic tape, the cutter can be positioned or directed along a continuous path for all types of contouring operations and parts may have regular or irregular shapes, straight lines, angles or circles.

Handwheels can be used for precision positioning of all three movements and push button controls may be employed for conventional milling operations. Thus every machine has three different types of controls incorporated in the design: handwheels, push button station, and automatic milling controlled by magnetic tape.

Both machine and control require ap-

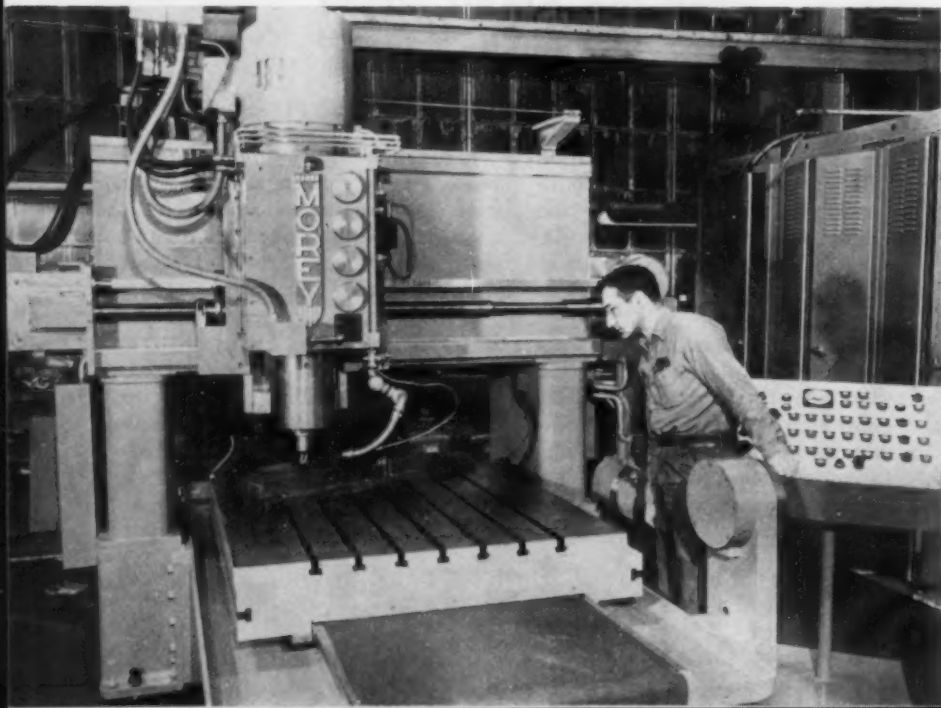
proximately 122 square feet of floor space for installation. The three control cubicles are designed for easy access to front and rear equipment panels to facilitate preventive maintenance.

The Morey A50 is the smallest miller to which General Electric has ever applied this type control. A selsyn-phase magnetic-tape, contouring-control system directs the machine-feed drives so the cutting tool is continually positioned with respect to the workpiece in accordance with a predetermined recorded program. Instructions are programmed on a one-inch-wide, 14-channel magnetic tape which can be easily stored.

The machine has 16 spindle speeds from 20 rpm to 3600 rpm, providing a range for machining of any material.

• • •

Positioning table by handwheel prior to starting tape controlled operation of the Morey profile and contour milling machine.





More pieces per man-hour in your plant can start right here

If you want to get more out of your man-power, think *first* of power chucking . . . on the machines in your shop or the lathes you are planning to buy.

The successful application of power chucking to your machines and your work calls for highly specialized and imaginative engineering know-how. Skinner puts by far the largest engineering team in the industry at your

service through your nearby Industrial Distributor. Put your power chucking problems up to him, or, if you prefer, write directly to our engineering department.

For information about Skinner's complete range of basic power chucking equipment, write for catalog to Dept. 144.

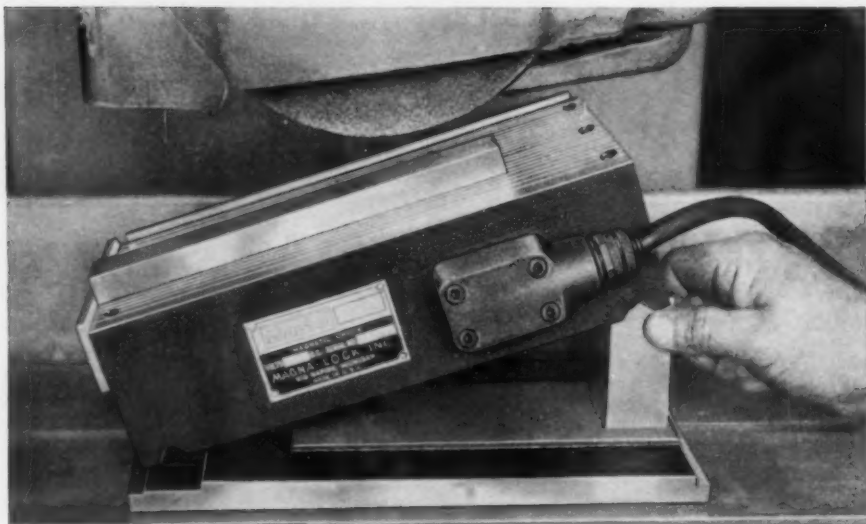


The Case of Quality

THE SKINNER CHUCK COMPANY

ESTABLISHED 1887

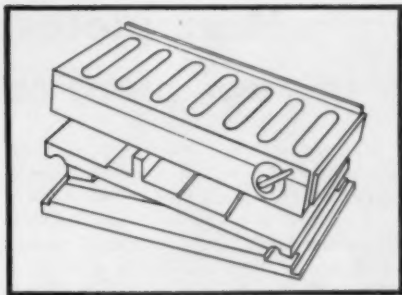
NEW BRITAIN, CONNECTICUT



Set 'em up fast and accurate with Magna-Lock Sine Chuck

NOW--
*permanent magnet
and electrical
sine chucks in a
complete range
of sizes!*

Working surfaces 6" x 6½" to
6⅛" x 21⅝". Each model fur-
nished with wood case and Table
of Constants.



Angular set-ups made with a
Magna-Lock Sine Chuck are fas-
ter, more accurate, cost less.
Get full details. Write Dept. B-48.

MAGNA-LOCK, INCORPORATED
BIG RAPIDS, MICHIGAN, U.S.A.



3-D Profile Milling with Infinitely Variable Speeds

ROCKFORD, ILL.—The first 3-dimensional profile milling machine that provides one-machine versatility for both ferrous and non-ferrous materials, so necessary in aircraft and missile parts,

was unveiled recently, at the Ekstrom, Carlson & Co. plant.

Development partner with the Rockford machine tool builders, both motor and control-wise, is Allis-Chalmers Mfg.

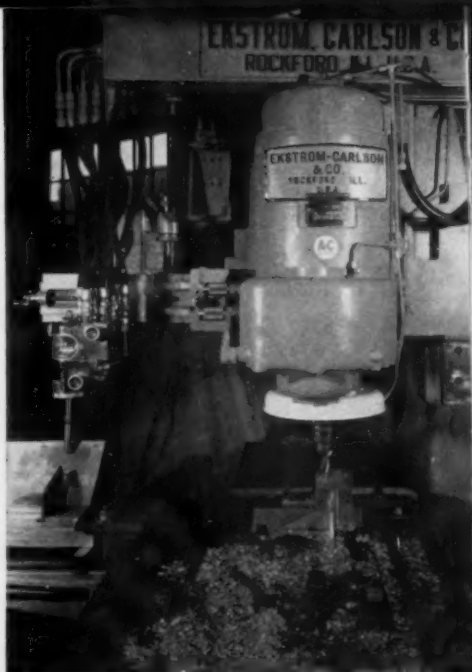
Field Reports

continued

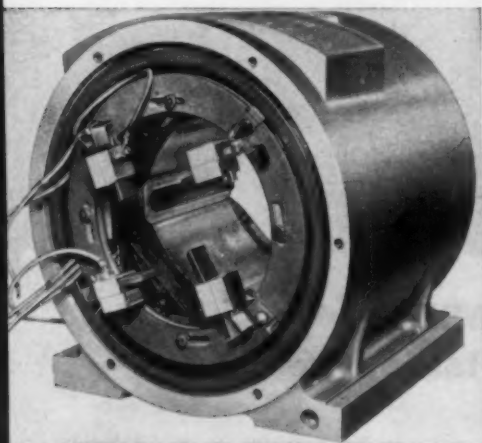
Co., Milwaukee. A-C developed the direct current 50 to 6000 rpm motor, in the shell type with electronic power unit and control, to meet requirements of Ekstrom-Carlson engineers for their new No. 210 profile milling machine.

The first motor was produced and placed on the No. 210 Ekstrom, Carlson 3-dimension, tracer controlled, profile mill and has been in continuous service producing parts made of titanium, steel and aluminum.

The motor is rated 10 horsepower, intermittent service at a base speed of 1500 rpm. The motor delivers constant torque from 50 rpm to 1500 rpm and constant horsepower from 1500 rpm to 6000 rpm. Variation of armature voltage causes speed variation in the range below base speed. Adjustment



Heart of the new Ekstrom, Carlson profiling milling machine is the Allis-Chalmers shell-type dc spindle motor. The first totally-enclosed, water cooled dc spindle motor with infinitely variable speed from 50 to 6000 rpm for the machine tool industry is rated 10 hp.



Brush rigging and yoke assemblies of dc shell-type motor designed by Allis-Chalmers. Unit is encased in Ekstrom, Carlson's water jacket frame.

of motor field voltage permits speed variation in the range above base speed.

The motor is installed in a vertical position. Mounting feet are integral with the outer shell. Outside diameter is 13½ inches, overall length 28 inches. Bearing hubs and spindle extension account for more than one third of the total length.

This motor is totally-enclosed, liquid cooled. Class B insulation and liquid cooling are used to permit compact design and to keep weight to a minimum. The outer frame serves as a supporting structure and as the outside shell of the water jacket. The inner shell of the jacket is the magnetic yoke of the

direct current motor. Internal heat from armature and field coils is transmitted by conduction through pole pieces and carried by moving internal air to the magnetic yoke, where it passes to the cooling liquid. Bearing housings bolt to the outer jacket to complete the enclosure.

A low pressure oil mist system provides lubrication for super precision

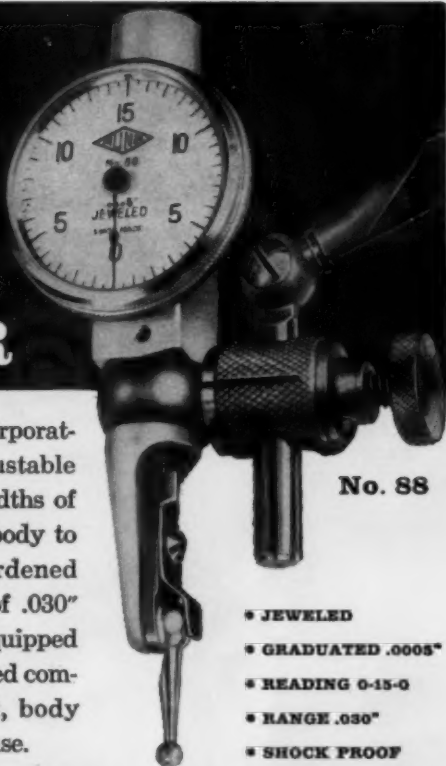
ball bearings. Seals keep oil from entering the motor.

Tracer controlled in three dimensions, longitudinally, traverse and rise and fall. It can also be equipped with swarf or twist.

The machine is at present made in two sizes—24" wide with four foot travel of table and 24" wide with 10 foot travel of table. • • •

ALINA DIAL TEST INDICATOR

A fully reversible indicator incorporating a clear easy-to-read, adjustable dial, graduated in half thousandths of an inch, a switch lever on the body to reverse action and TWO hardened chrome plated contact points of .030" and .100" diameter that are equipped with a non-slip ratchet. Furnished complete with a universal shank, body clamp, and plush lined steel case.



No. 88

- JEWELLED
- GRADUATED .0005"
- READING 0-15-0
- RANGE .030"
- SHOCK PROOF

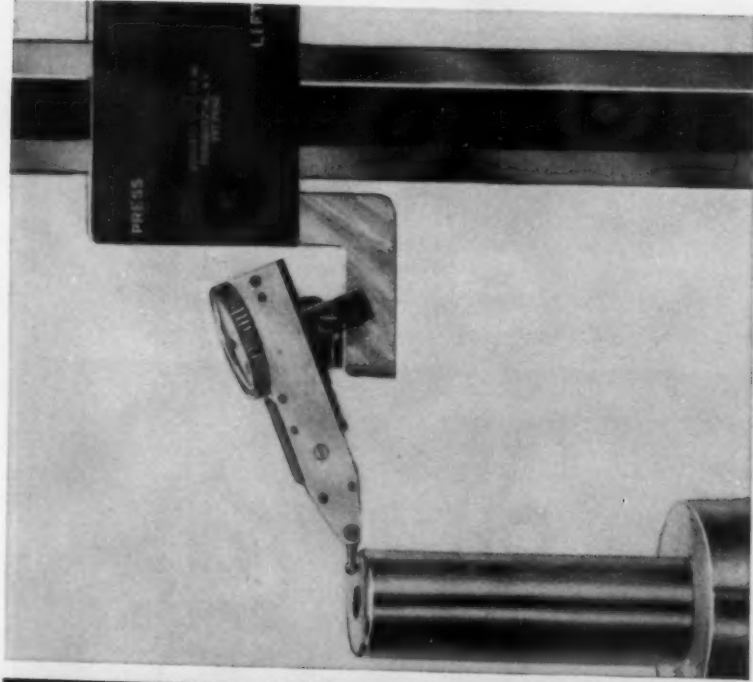


WRITE FOR LITERATURE AND COMPLETE CATALOG

ALINA CORPORATION

122 East Second St., Mineola, L. I., N. Y.

Use postpaid card. Circle No. 303



(Left) CHECK MASTER contact point on work piece shown 22 times actual size. To see the smallest variations CHECK MASTER will detect, illustration would need to be 500 times actual size. (Right) CHECK MASTER on STANDARD Comparator Height Gage gives "tenth" accuracy.

The Importance of Measuring Practically Nothing

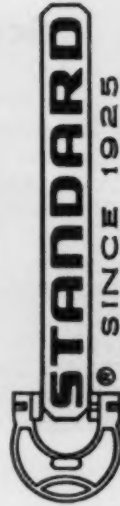
it is to measure. Yet, accurate checking of microscopic variations is what makes the difference between ordinary and truly fine precision manufacture.

CHECK MASTER

Is so unusually sensitive that it responds to dimensional variations as fine as .000020"!

Use this versatile precision instrument in setting up work ON a surface and truing pieces IN machine tools. You'll find it superior in actual feature-by-feature comparison to any similar device in the industry (See chart opposite).

Ask the Man from Standard or Write
for CHECK MASTER Bulletin



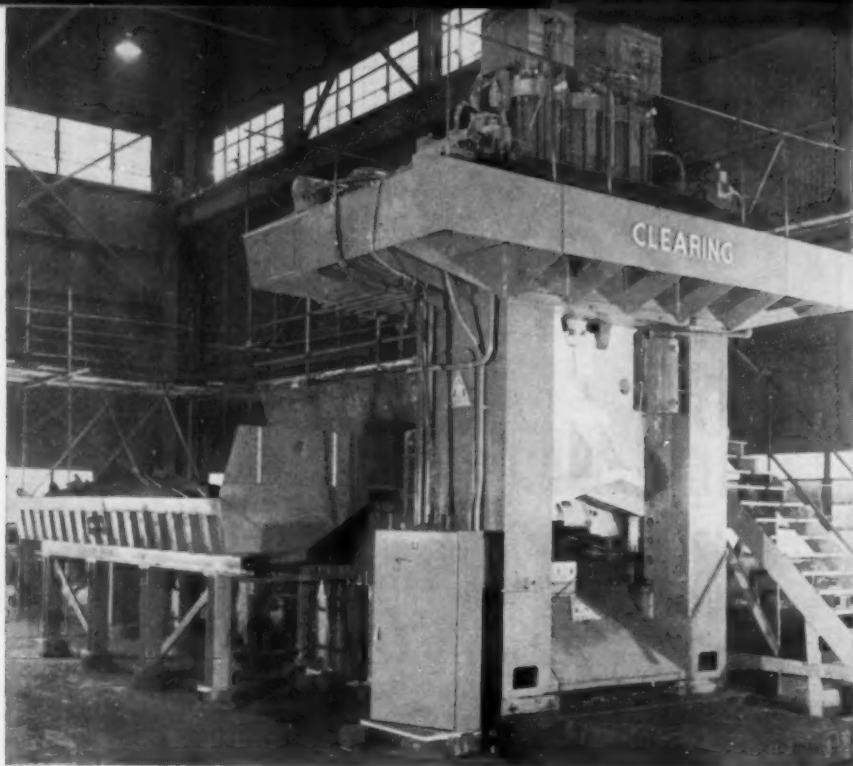
GAGE COMPANY, INC.
POUGHKEEPSIE, N.Y.

A COMPLETE LINE OF GAGES . . . INDICATING, FIXED AND ADJUSTABLE TYPES

Use postpaid card. Circle No. 304

COMPARATIVE ANALYSIS OF TEST INDICATORS

	STANDARD					CHECK MASTER				
	Make	Make	Make	Make	Make	A	B	C	D	E
Bearings Jeweled	ALL	Some	None	None	Some	ALL	None	None	None	Some
Bearings Removable	ALL	Some	Some	None	ALL	ALL	None	None	None	ALL
Pivot Ends Covered	YES	YES	No	No	No	YES	No	No	No	YES
Ratchet Contact Point	YES	YES	YES	No	YES	YES	No	YES	YES	No
Contact Pressure (gr.)	21-21	23-33	23-33	23-23	45-49	28-38				
Contact Pressure Equal in Both Directions	YES	No	No	YES	No	No				
On-Center Mounting Vertical & Horizontal	YES	No	Vert. Only	No	Vert. Only	No				
Absence of Reversing Lever	YES	No	No	YES	No	No				
Total Weight (grams)	29	42	33	70	77	35				
Hand Rotation Always Clockwise	YES	No	No	YES	No	No				
.001" & .0001" Con-vertible	YES	No	No	No	No	No				



Rear view of the Clearing Hydraulic Scrap Shear.

Automatic Scrap Shear Cuts Scrap into Equal Lengths

CHICAGO—A revolutionary new automatic Scrap Shear is undergoing final tests in CMC's Chicago Plant. The machine weighs about 335,000 pounds, is two and one-half stories high and is rugged enough to take the punishment of full time outdoor operation—yet it is designed with all the precision of Clearing's Metalworking Presses.

The Clearing Scrap Shear will cut almost any kind of heterogeneous scrap into equal lengths, adjustable in 6 inch

increments from 6 to 48 inches. The first shear is being built for the Heller Compressed Steel Company of Peoria, Illinois. Ten other Scrap Shears are currently under construction.

One Clearing Scrap Shear will be able to do the work of five or six conventional alligator type shears, now used by the scrap industry. In addition, the new shear virtually eliminates the need for torch cutting in the yard. It will develop 600 tons pressure and

cut up to 30 tons of scrap per hour.

Operation of the shear is simple, a magnetic yard crane loads the hopper with scrap. When the hopper is full, the operator pushes a "Start" button. The hopper is hydraulically elevated, dumping the contents into the feed box. A lid on the box closes with 95 tons pressure, and the hopper automatically returns to its original position.

The hydraulic ram in the feed box moves forward a pre-set distance equal to the length of cut, pushing scrap under the shear blades. A 100 ton hold-down device locks down, holding the scrap firmly in place. Then the shear slide is automatically actuated, shearing the scrap charge. The shear slide rises, hold-down pressure is released, and the ram moves forward to start another cycle.

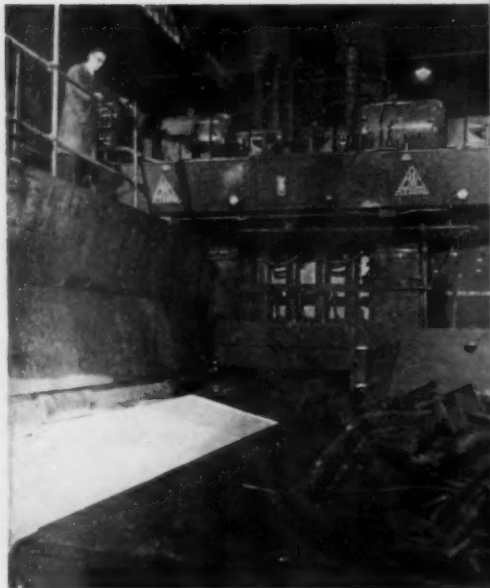
The cycle is automatically repeated until all the scrap has been sheared. While the shear is operating, the loading hopper may be refilled with the next charge of scrap.

The same magnetic crane used for loading the hopper can pick up the sheared scrap and load it into railroad cars, or conveyORIZED equipment can be installed to remove scrap from the shear. The conveyor may empty directly into railroad cars, or on to a stock pile.

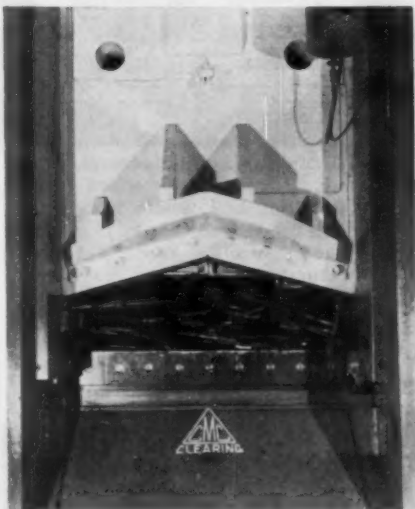
Multiple speed stroke provides fully automatic speed change for fastest possible cycling.

• • •

Heavy shear blades close on a load of scrap. Some of the hold down fingers can be seen just behind the upper blades. Four upper blades and three lower blades fit so precisely that it is difficult to see the parting lines in this unretouched photo. All blades have four cutting edges.



The feed box ram pushes a load of railroad scrap under the hold down fingers and into the blade, while another load waits in the hopper.



J & B PANTOGRAPH MILLING MACHINES

give you maximum
accuracy and efficiency!

2 Dimensional Model 2-A



Versatile & Dependable

- ENGRAVES
- PROFILES
- DIE CUTS
- MILLS

3 Dimensional Model 3-AB



Greater . . .

- SENSITIVITY
- CAPACITY
- ACCURACY
- RANGE

Model 2-A performs tracer-controlled engraving operations plus die cutting and profile work.

The 3 Dimensional J & B pantograph miller Model 3-AB is a sturdy production machine which reproduces copy on flat or curved surfaces, in reduced or magnified size.



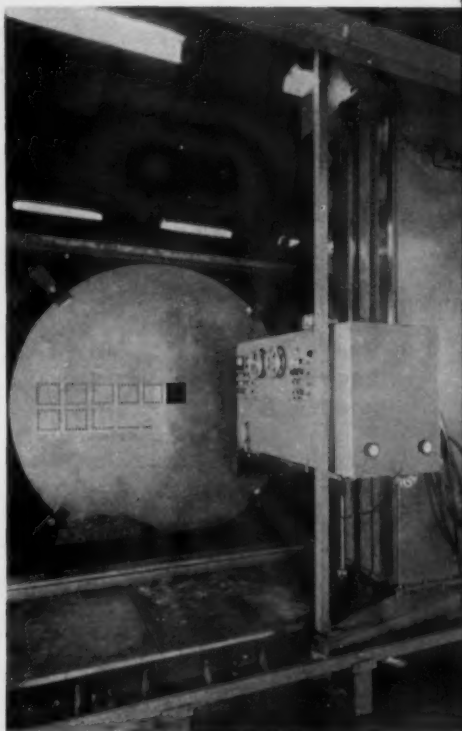
Send for latest brochures.

JOHNSON & BASSETT INC.
PRODUCTION TOOL DIVISION
WORCESTER, MASSACHUSETTS

Use postpaid card. Circle No. 327

Field Reports

continued



Drilling Atomic Plate

EAST CANTON, OHIO—The Canton Tool Manufacturing Company recently completed a deep drilling operation on an atomic core plate for the Westinghouse Electric Corporation. This 30,000 pound plate, 7 feet high and 18 inches thick, was forged from 347 stainless steel.

The new Canton Tool 'Deep Hole Driller' on its initial effort repeatedly thrust a 13/16" drill through the 18 inches of stainless steel to remove the 6-inch squares.

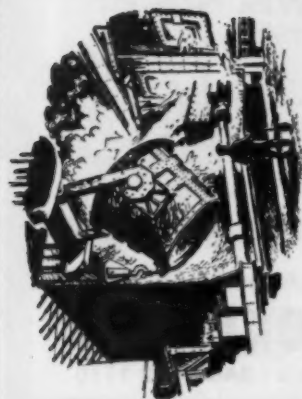
• • •

EQUIP FOR THE SIZE OF THE JOB

USE THE PERFECT COMBINATION

For Assured Accuracy

in **MICRO-DRILLING**



SPHINX

**HIGH SPEED STEEL
MICRO-DRILLS**



Drills from .0016" to .0591" are stocked in increments of .0004" (.01 mm). From .0610" to .1181" in increments of .0020" (.05 mm). Left hand micro-drills for use on Swiss type automatic screw machines. Short flute center drills. Send for Bulletin "Q" listing complete line of drills or Catalog M listing collets as well as full line of instrument lathes and accessories. **Louis Levin & Son, Inc., 3610 S. Broadway, Los Angeles 7, California.**

LEVIN®

SUPER PRECISION COLLETS



Super precision collets for jewelers type lathes. Ideal for holding micro-drills or other parts where concentricity is important. Available from stock in complete range of sizes from .004" (.1 mm) to 5/16" (8.0 mm).

Field Reports

continued

Boring Contoured Surface of Engine Adaptor

FRANKLIN PARK, ILL.—Gleaming adaptor for a powerful rocket engine receives accurate, tracer controlled boring of its contoured internal surface at the plant of Diversey Engineering Company.

Diversey meets the critical accuracy and surface finish requirements of this adaptor by using carbide tooling on a 48" Monarch air-gage tracer lathe.

Workpiece material is forged, high-temperature alloy steel. Note intricate internal contour of finished workpieces in foreground. • • •



INDUSTRIAL GAS EQUIPMENT
BURNERS & FURNACES (Heat Treating, Melting, Soldering)

NO BLOWER OR OTHER POWER NEEDED
... just connect to gas supply!

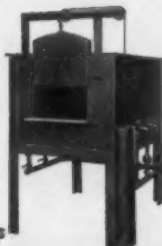
Outstanding service since 1911! Each unit, with the famous "BUZZER" Venturi, delivers the hottest, quickest heat attainable without a blower. Full range control of heat and turn-down. Standards or specials available for manufactured, natural or liquefied gas applications.



Write for New
"BUZZER" Catalog.



High Speed Full
Muffle Furnaces



Large Floor Type Oven Furnaces

CHARLES A. HONES, INC.

129 S. Grand Avenue, Baldwin, L. I., New York • Baldwin 3-1110

Use postpaid card, Circle No. 328

Most Drilling Per Dollar!



See it in action at
ASTE SHOW, Booth 1262—
Phila., May 1-8.

Veet

3 foot

RADIAL

\$3370⁰⁰

F.O.B. Detroit
QUICK DELIVERY

Features Found Only In Highest Priced Radials

- ✓ Finger-Tip Clutching
- ✓ Automatic Drill Ejector
- ✓ Push Button Elevation
- ✓ Centralized Controls

- ✓ Hardened Column & Way Inserts
- ✓ Automatic Depth Control
- ✓ Timken Bearing Column & Spindle
- ✓ Head Glides on Ball Bearing Rollers

Refer to Sweet's Machine Tool File (IA/VE) for our catalog.

Send for Brochure of **Veet's** 16 Points of superiority and name of nearest dealer, who will arrange actual demonstration of the **Veet** Radial in your plant, without obligation.

MFGD. BY **Veet INDUSTRIES** EAST DETROIT, MICH.

Tel. PRescott
6-3000

*America's
Most Complete Line
of Self-Protected
Bearings*

"Cartridge" Labyrinth
Sealed Bearing
(Removable Seal)

"Cartridge" 4-way Filter
Sealed Bearing

NORMA-HOFFMANN

Sealed Bearings

**Give You Dependable
Trouble-Free Performance**

Felt Sealed Bearing
(Removable Seal)

Metal Shielded
Bearing

"Plastic" Rubber
Sealed Bearing

There are good reasons why Norma-Hoffmann Sealed Bearings give such outstanding performance under all types of operating conditions.

First — the efficient seals, metal, synthetic rubber, or felt, keep grease in . . . keep dirt, dust and other harmful material out. The special seal designs eliminate race distortion, assure dimensional exactness and quiet operation. They simplify mountings . . . speed up assembly.

Second — all Norma-Hoffmann sealed bearings are "factory packed" with a carefully metered quantity of high quality filtered grease . . . grease that is highly resistant to oxidation . . . grease chosen to meet specific operating temperature requirements.

Result — trouble-free performance over long periods without regreasing.

Investigate Norma-Hoffmann sealed and other bearings for your equipment. Write for engineering assistance and catalog.

Special Seal Design PLUS the right grease for the application insures against dry bearings.



precision ball, roller & thrust bearings

NORMA-HOFFMANN

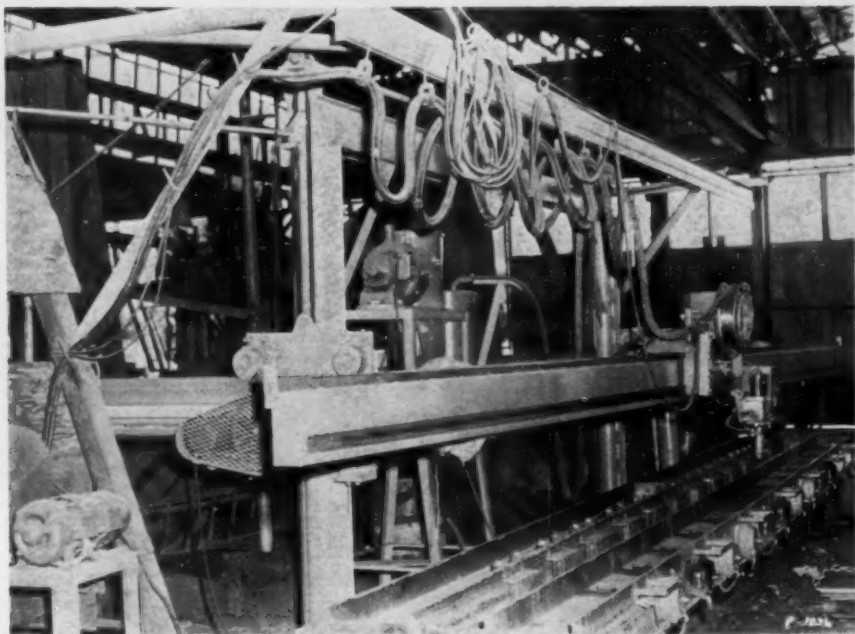
BEARINGS CORPORATION • STAMFORD, CONN.

Founded 1911

FIELD OFFICES: Philadelphia • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Kansas City • Los Angeles • San Francisco • Seattle

Use postpaid card. Circle No. 307

MACHINE and TOOL BLUE BOOK



Courtesy The James F. Lincoln Arc Welding Foundation.

Manipulator for Automatic Arc Welding

● Novel feature of this 6300 lb. manipulator for automatic submerged arc welding is the mounting of the 33 ft. rail on lateral booms at either side, thus allowing the rail to be moved in or out independently at either end a maximum of 6 ft. This gives an angular adjustment of as much as $25\frac{1}{2}^{\circ}$ from the parallel position for

handling long welds in tapered girders and other shapes requiring off-line welding without repositioning of work.

Such flexibility is possible through incorporation of hinge plates and pins at the connections between booms and rail, plus a sliding hinge or bushing on one boom. Columns and booms are of 8 in. pipe, with angle iron track

rails welded to them. The rail is simply two 10 in. channels welded together, with cold rolled flat bars intermittently welded to the top and front faces for the rollers of the welding carriage. This eliminated all machining on the rail.

Vertical travel of the boom is 8 ft. through chain and sprocket drive from shafts mounted along the upper flange of the WF beam joining the tops of the columns. The latter are spaced on 20 ft. centers, with overall height 11 ft. 6 in.

Vertical and lateral movement of the

booms is controlled through three push-buttons on a pendant switch at the operators position, which also has the control buttons for the standard submerged arc welding carriage and head. Flux recovery unit will be noted at the rear.

The unusual manipulator was the subject of an award-winning paper submitted by Harry S. Powell, Production Manager of Pittsburgh-Des Moines Steel Company, Fresno, California, in the recent Machine Design Competition sponsored by the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio.

• • •

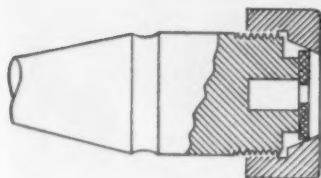


Figure 1

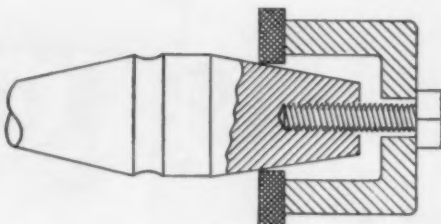


Figure 2

Chucks for Thin Workpieces

By **Federico Strasser**

● For boring comparatively thin workpieces in great quantities, some special collet is needed, because it is not possible to hold them in an ordinary 3- or 4-jaw chuck.

A very simple and inexpensive collet is made in two parts (Fig. 1): a male part which is provided with a proper Morse-taper-shank and a female part

(a clamping nut). The work is held between the two parts by the inside taper of the nut which clamps firmly the workpieces against the male part of the collet.

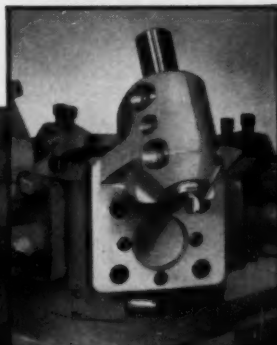
For easy clamping and unclamping of the nut, its outer, peripheral surface is properly knurled.

The above described collet is for turn-

**new microbore
turning heads
feature speed, ruggedness,
precision!**

Plate Mounting Heads, which feature hardened straight shanks, mount on any turret plate for multi-diameter operations.

Flange Mounting Heads mount directly on the face of the turret providing extreme rigidity.



STANDARD, GENERAL PURPOSE FOR ALL HORIZONTAL TURRET LATHES!

Rugged, rigid and adjustable in seconds, these new general purpose turning heads perform a variety of single and multi-diameter operations repetitively with unfailing accuracy. Microbore's exclusive micrometer vernier adjustment provides a fast, accurate means of setting the tool point over a wide working range. 0" to 4" for *Shank or Flange Mounting Heads*. 0" to machine capacity for *Plate Mounting Heads*. Extreme rigidity throughout permits heavy stock removal while holding to closest tolerances. This combination of speed, ruggedness and precision reduces downtime, increases accuracy of the end product. Write for complete information.

Shank Mounting Heads permit quick, easy mounting in the turret and maximum versatility.

**VISIT MICROBORE BOOTH No. 1540
at the A.S.T.E. Show, May 1-8th**

See these new developments:

- Pre-Set Tooling
- Tool Designers Layout Kit
- Flash-Change Bridgeport Spindle
- Turret Lathe Tooling

DEVILIEG  MICROBORE® SYSTEM

DEVILIEG MICROBORE • DIVISION OF DEVILIEG MACHINE COMPANY

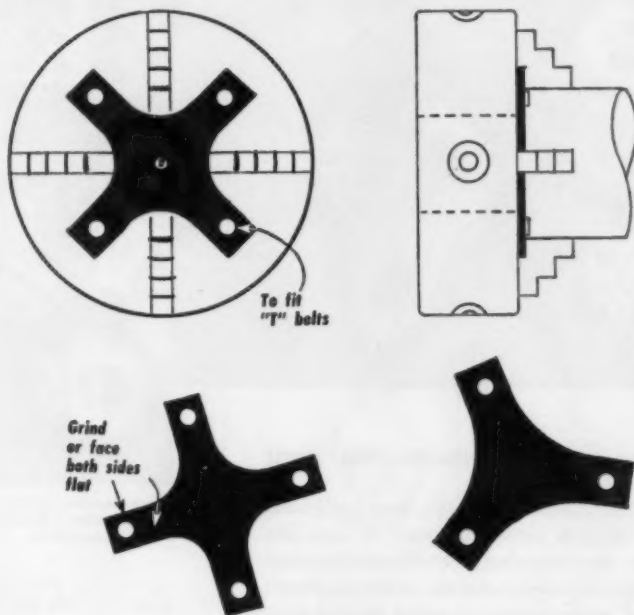
2720 West Fourteen Mile Rd., Royal Oak, Michigan

Use postpaid card. Circle No. 308

ing holes in the workpieces. If vice versa, it is the outer surface of the rings which is to be worked on, then the chuck is made according to fig. 2. Then the washer-type workpiece is held by

its hole by a male-tapered part and the clamping is done by means of a cup fastened to the first member of the chuck by means of a proper screw.

• • •



Stock Stop for Chuck-Held Short Work

By Phil McCafferty

● Flame-cut or saw mild steel plate as shown and grind both sides flat to make a handy stock stop for three or four jaw lathe chucks. Bolted in place on the chuck, it makes a handy and accurate stop for production runs of short material that must be held in the chuck. Three or four common "T"

bolts hold the stop securely in place on the chuck face.

This stop is especially handy on large diameter work that cannot be easily positioned on the chuck with a plug in the spindle nose for positioning, and where it is desirable to have the work held by as much of the jaws as possible.

• • •



New High Speed

AUTOMATIC DUAL DIAL

**MARKING
MACHINE**



ROLL MARKS 6,000 PIECES PER HOUR

Here is another Noblewest achievement for faster, better marking at lower cost. Designed especially for high production marking of thin walled cup-shaped parts or tubes. Model 482, illustrated, is shown tooled for *Roll Marking* a famous name garden hose accessory. Operator simply loads the parts onto the work feed dial. From that point, the process is completely automatic.

Whatever your requirements for *permanently indented marking*, you are assured of the finest when you specify Noblewest. Write for comprehensive catalog. Noble & Westbrook Manufacturing Co., 9 Westbrook Street, East Hartford 8, Conn.

Visit the Noblewest MARK-O-RAMA—Booth 837—at the Tool Engineers' Show

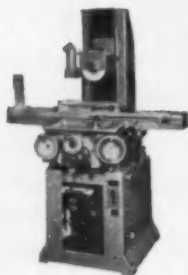
MARK IT BEST WITH



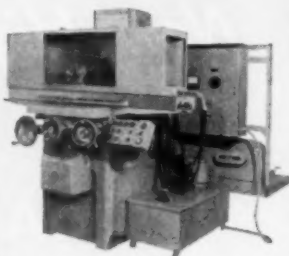
NOBLEWEST

MARKING
NUMBERING
EMBOSSING
GRADUATING

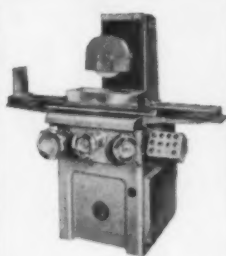
Use postpaid card. Circle No. 309



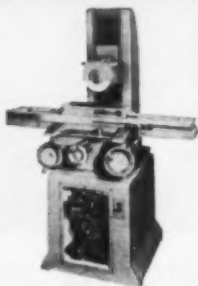
REID Model 618 P
Power Table Power Crossfeed



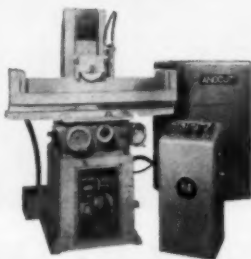
REID Germanium slicing machine



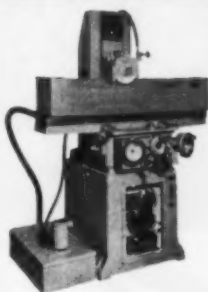
REID-O-MATIC 824
All Electric Production and Toolroom
precision surface grinder



REID Model 618 H
Hand operated (Table and Crossfeed)



REID Electrolytic surface grinder



REID Model 618 PY
(Power Table Hand Crossfeed shown
with wet grinding attachment)



*Manufacturers of precision
surface grinders for
production and toolroom needs*

REID Precision Surface Grinders meet a wide range of toolroom and production needs. As proof of this versatility REID Grinders are in everyday use in thousands of leading industrial plants.

Nearly 60 years of manufacturing experience are represented in REID Grinders, and our engineering contributions in this field of precision are a matter of record.

For low cost, dependable performance . . . specify REID . . . the quality Surface Grinder. Available in several sizes . . . write for descriptive literature today.

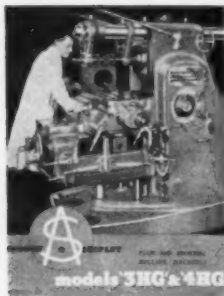
REID PRECISION SURFACE GRINDERS

REID BROTHERS COMPANY, INC. / 134A ELLIOTT ST. / BEVERLY, MASSACHUSETTS

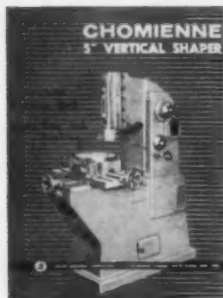
Use postpaid card. Circle No. 310



(See Number 1)



(See Number 2)



(See Number 3)

Literature described below presents products being exhibited at the ASTE Tool Show in Philadelphia, May 1-8, at designated locations. To receive copies of these booklets, simply encircle corresponding numbers on handy postage-free Action Card following page 320.

1. Lapping Machines. The Gyro-Matic 24 features the advanced design work holder. The high production features are piece parts to 1 light band (.0000116) or less, and precise finishes to millionths of an inch, according to folder. Spitfire Tool and Machine Co., Chicago 41. Space No. 1638.

2. Plain and Universal Milling Machines. Models 3 and 4 HG are high power machines, designed to take advantage of conventional, negative, zero or high rake milling with high speed steel or tungsten carbide cutters. Adcock & Shipley, Ltd., N.Y. 7, N.Y. Space No. 1456 & 1470.

3. Precision Vertical Shaper. Leaflet tells of the Chomienne shaper machining irregular shapes and forms in one set-up. Ram is through rocker arm for high speed on return stroke, with ram adjustment up to 5". Austin Industrial Corp., White Plains, N.Y. Space No. 1471.

4. Vertical Boring Mill. The Jungenthal DKE 1200 has patented system of roller and ball bearings said to guarantee a true running of table from .00012 to .0002". Machines are made with 40", 55", and 60" tables, with high speed ranges to 355 rpm. The DKE 1600 is also discussed in catalog available. Barer Engineering & Machinery Co., Ltd., Champlain, N.Y. Space No. 1370.

5. Metal Disintegrator. Model J-1 for small or delicate work is described in flyer. When chucked into a drill press and hand operated similar to drilling, it will disintegrate small taps or drills. Jiffy Disintegrators, Inc., Royal Oak, Mich. Space No. 2014.

6. Automatic Angle Tangent to Radius Dresser. As described in leaflet, after dresser is preset to desired profile will be dressed automatically in one continuous operation, eliminating any break in profile at points of tangency. Model P-2 dresses grinding wheels to 14" dia., Model P-1 to 10" dia. Jeon Mfg. Co., Washington 20, D.C. Space No. 2054.

7. Automatic Index Table. Flyer describes hydraulic driven table with 14 different "go" and "no go" dimensions which can be checked. The 18-position work dial is interchangeable with four screws and two dowels. Inter-Lakes Eng'g. Co., Mt. Clemens, Mich. Space No. 801.

Free Literature

continued

8. Optical Dividing Head. The accuracy of the dividing head is attributed to special spindle bearings and double microscopic pick-up of master circle. Brochure on Leitz dividing head from Opto-Metric Tools, Inc., N.Y. 13, N.Y. Space No. 101.

9. Subland Drills. Sublands allow machining of two or more diameters with one tool in one pass. What these tools are and how to order them is discussed in catalog available. Mohawk Tools, Inc., Montpelier, Ohio. Space No. 230.

10. Milling Machines and Attachments. Vertical models 45 and 55, with horizontal model 60 are featured in brochure, with tabbed specs. Rotary tables, arbors, vises are a few of attachments described, as well as drilling machine with upright $1\frac{3}{4}$ " cap. Index Machine Co., Jackson, Mich. Space No. 524.

11. Automatic Drilling and Tapping Units. Diagrams with special equipment, electrical controls, specs., and adaptation for the units are given in folder obtainable. Units are adaptable for short-run production of a variety of parts, as well as 24-hour production of a single part. The Govro-Nelson Co., Detroit 8, Mich. Space No. 2145.

12. Spiral Drill Grinding Machine, Model N-4-90-Z, is reported capable of grinding cylindrical pilot on counterbores, pilot drills, etc. This and relieving of cutting edges is done in one operation on 2-, 3-, and 4-lipped tools. Leaflet available from Cawi Machine Co., Inc., Jersey City 2, N.J. Space No. 972.

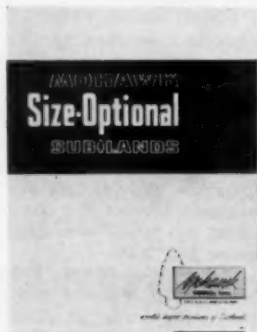
13. Automatic Vertical Precision Boring machine, Model VBM, is described in brochure. The vertical construction makes easy handling of workpieces. Machine features automatic cycle controlled by a simple plate cam. The Wadell Equipment Co., Clark, N.J. Space No. 1816.

14. Tape-Controlled Positioning System. The tape control equipment, as outlined in literature, can be applied to drilling, boring, jig boring, milling, etc. Called the Probomat System, it is applied in two types: The Tele-Probomat for control of leadscrews and worms, and the Pilot Probomat for control of slides and rotaries, independent of leadscrews and worms. Installations include control console with control panel and tape reader, and as many control units attached as there are axes to be controlled. The Warner & Swasey Research Corp., N.Y. 1, N.Y. Space No. 1756.

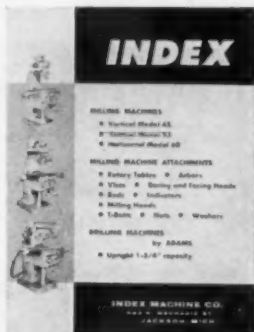
15. Hardened Plate Type 3-Jaw Chucks are available 8"-15" dia. Flyer features advanced construction in which jaw slots are formed by separate, hardened and ground segmental plates. The Whiton Machine Co., New London, Conn. Space No. 1163.



(See Number 8)



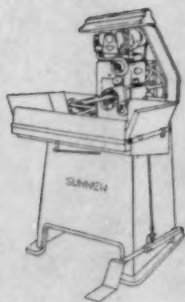
(See Number 9)



(See Number 10)

PROBLEM:

**PRECISION
AND FINISH
IN A BUSHED
AND PORTED
BORE**



Dia. range of standard honing
tools: $\frac{1}{8}$ " to 2 $\frac{1}{2}$ "



SOLUTION: First, the bore in the casting is Sunnen Honed to assure a leak-proof press-fit for the bushing. After assembly, a large port is machined in the bushing.

Finally, the bushing I.D. is Sunnen Honed to geometric roundness and straightness... with a tolerance of .0004" and a finish of 8 micro-inches.

Grinding required expensive fixtures for both operations and could not hold the specified tolerances. Many assemblies failed on pressure test.

Sunnen Honing eliminated fixtures and fixture set-up time. The long, self-locating honing tool bridged the port... eliminated washout... and guaranteed the specified tolerance and finish.

Result: No defective assemblies — no production delays.

You can handle precision work like this for an investment of less than \$1,000. Ask for a free demonstration.

SUNNEN[®]
PRODUCTS COMPANY
HONING

SEND FOR 5 INFORMATIVE
HONING BOOKLETS

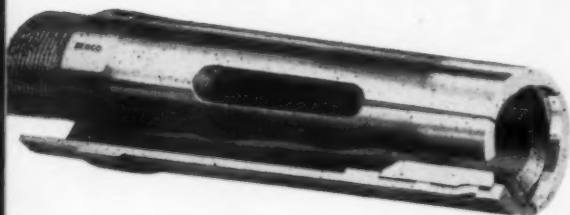
CHECK READER SERVICE CARD

7022-F N. Manchester Ave., St. Louis 17, Mo.
Canadian Factory: Chatham, Ontario 7746

PROVEN LONGER LIFE
PROVEN BETTER PRODUCTION

BENCO

model "A" master pushers
with
carbide pusher pads



You get more and better output with Benco Model "A" Master Pushers and carbide pads. Production runs in excess of 5,000,000 pieces have been achieved without changing pads or loss of tension of pushers.

Designed with "rocking ridge" in the pad recess, the Model "A" Master Pusher permits the pads to adjust themselves to full bearing on the stock. Thus scoring of the stock is avoided and feeding becomes more accurate. You will reduce your cost and get better production with Benco Model "A" and carbide pusher pads because no wear appears on the feed pad, therefore, no change in tension results and pusher troubles are eliminated.

For long life, for unmarked stock, Benco carbide pusher pads will far exceed the performance of any similar tool. The extremely low prices of carbide pusher pads will be returned to you many times in the savings they effect. You simply can't afford to be without them. For your short run jobs, very inexpensive pads are available for these master pushers in bronze, cast iron, hardened steel and meehanite.

Most sizes of Solid and Master Pushers, Solid and Master Collets for all popular automatics will be delivered immediately from stock. Send for price list and catalog.

BENCO COLLET manufacturing company

Cleveland 14, Ohio

Use postpaid card. Circle No. 3B

16. "The Millers That Use Their Heads" is title of folder available. Twin mills and semi-automatic millers are described. Machines feature spindle run-out within .00015" tir; parallelism and right angularity to tenths. The Robert E. Morris Co., West Hartford 7, Conn. Space No. 501.

17. Mountings. Bulletin 1000 discusses the Adjust-O-Mounts which utilize Met-L-Flex stainless steel wire resilient cushions. Claimed to be impervious to oils or moisture, the mounts will not deteriorate. Robinson Aviation, Inc., Teterboro, N.J. Space No. 841.

18. Gage Supplies. Available for immediate delivery is a complete line of gage handles, gage blanks, and accessories that can be made into finished gages in a matter of minutes. Aluminum gage handles come in taperlock, trilock or reversible wire type styles. Gage blanks are made from hardened steel to 62-64 Rockwell. Leaflet from Huron Machine Products, Inc., Dearborn, Mich. Space No. 127.

19. Slide Assemblies. Bulletin 125 defines a variety of standard, stock components for building up equipment. 132 assembly models now available. Stroke lengths are from 3/4" to 8", with slide working surfaces from 2x3" to 8x24". Russell T. Gilman, Inc., Grafton, Wis. Space No. 1016.

20. Lightweight Tooling Bridge Equipment. The upright and horizontal pieces of lightweight magnesium provide accuracy

and ease of measurement of models, dies, and tools during tooling process. Leaflet from The Challenge Machinery Co., Grand Haven, Mich. Space No. 1073.

21. Cylindrical Grinding Machine is described in flyer, emphasizing the use of coated abrasive belts. Machine will handle work up to 18" long and to 4" dia. Production Machine Co., Greenfield, Mass. Space No. 1811.

22. Grinder-Millers, Power Quills, milling machines and accessories deliver up to 45,000 rpm at high torque under load, and permit use of tungsten carbide mills with no chatter. Other important features defined in folder from Precise Products Corp., Racine, Wis. Space No. 1155.

23. Pneumatic Tools. The M-B junior pneumatic grinder does not require lubrication, and the air control valve remains set in any position, thus controlling speed of grinder. Other pneumatic grinders are described with prices and drawings in catalog available, as well as air line filters and lubricators. M-B Products, Inc., Detroit 3, Mich. Space No. 1459.

24. "Inner Diameter Tools" is title of catalog available. Features of the cutter are its interchangeability (taking only seconds to change), and also it floats within bar to compensate for errors. Spade and core drills and gun type drills are discussed also. Madison Industries, Inc., Muskegon, Mich. Space No. 1224.



(See Number 18)



(See Number 19)



(See Number 20)

Free Literature

continued

25. Electronic Indicator. The Indi-Ac indicator can be used for surface plate or height gage work, according to flyer available. In use, minute changes in gage tip position are electronically magnified up to 10,000 times and read directly on meter. Cleveland Instrument Co., Inc., Cleveland 15, O. Space No. 953.

26. Tube-Piercing Machine. The Kopyy tube-piercing machine, as described in folder, claims to pierce 600 tubes per hour and assure accuracy by absolute control and support of tube during action. Kopyy Tool & Die Co., Ferndale 20, Mich. Space No. 915.

27. Two Way Dial Test Indicator. As described in leaflet, the indicator requires no switch levers to reverse direction of operation. It has full .030" range, graduated to .001". The Lufkin Rule Co., Saginaw, Mich. Space No. 1046.

28. Rotor Belt Sanders, for 2" and 1" wide belts, are described in leaflet. They feature twin interchangeable air motors, and all adjustments for best application of belts. Rotor Tool Co., Cleveland 32, Ohio. Space No. 1832.

29. Self-Feed Air Powered Drilling Units are the subject of recent catalog. Featured are Par-A-Matic drills for portable or stationary operation, automatic or

semi-automatic; Bant-A-Matic, similar, but smaller; and Midg-A-Matic, small, high speed, with single speed of 20,000 rpm. Aro Equipment Corp., Bryan, O. Space No. 1810.

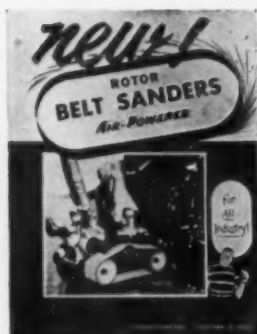
30. Small Boring Heads. Catalog 6B describes these small outside diameter heads which can be used in clusters when several holes are to be bored at one time. Briney Mfg. Co., Pontiac, Mich. Space No. 203.

31. Water-Based Metalworking Products, the Lusol line, are discussed in booklet and claim to have the highest heat-removing capacity of all coolants. Featured are K-7, all chemical liquid concentrate; Shamrock, water-soluble chemical emulsion; Unikool, cutting fluid, among others. Anderson Oil and Chemical Co., Portland, Conn. Space No. 331.

32. Tracing Attachments for Engine Lathes. The Mimik 9000 series combines accuracy of the tracer valve with the compound movement, and covers lathes from 10" to 25" swing. Brochure available from Retor Developments, Ltd., Galt, Ont., Can. Space No. 2018.

33. A Compound for Tapping, Threading, and drilling is the Tap Magic, a blend of chemicals, said to cut clean threads, stop tap breakage and improve surface finish. Flyer is available from The Steco Corp., Little Rock, Ark. Space No. 2138.

34. Boring Mill. The A.F. 9 is a strongly built machine to absorb vibrations in finishing high speeds, and to resist hard machining works in slow speeds, as out-



(See Number 28)



(See Number 29)



(See Number 30)

SEE US AT BOOTH 1423
A. S. T. E. SHOW

T-J CUTTERS

**assure higher production
precision die sinking!**

The facts speak for themselves when more and more metal-working engineers are finding that T-J Cutters assure precision accuracy, and high production die sinking. T-J Cutters are extra sturdy too . . . for longer life . . . reduced die costs . . . more profits for you.

Specially designed and precision manufactured for speed, accuracy and long life, T-J's complete cutter line means less breakage . . . more work between grinds. Made from the finest tool steels available . . . properly machined . . . scientifically heat-treated and accurately ground. Send for catalog No. 1037 for information of T-J's wide range of styles and sizes. The Tomkins-Johnson Co., Jackson, Mich.

**We invite Your Inquiries on Special
Cutters Too!**



TOMKINS-JOHNSON

RESEARCH • DESIGN • MANUFACTURE • DISTRIBUTION • SERVICE • U. S. PATENTS

Use postpaid card. Circle No. 311

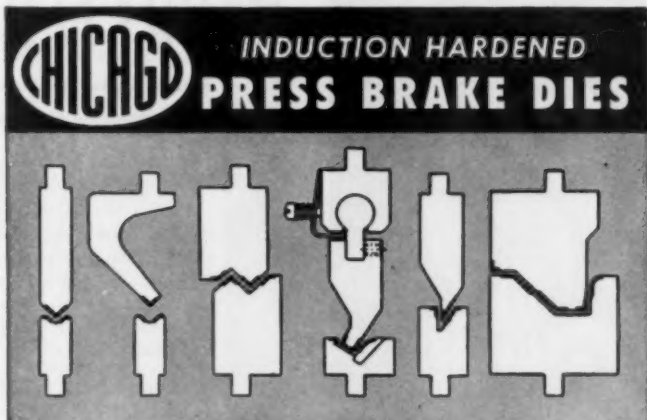
lined in folder. Pegard, Andenne, Belgium. Space No. 1348.

35. Drill Jig Bushings, with price list and technical data, are defined in Bulletin No. 1105. Extra-long bushing life is credited to their being made of a special high-carbon chromium bearing steel. Ace Drill Bushing Co., Inc., Los Angeles, Calif. Space No. 2052.

36. Cross-Slide Rotary Table. Instead of repositioning for each cut, operator dials

workpiece to each new position by means of cross-slides, according to bulletin. Specs.: Tolerance on rotary movement, $\pm \frac{1}{2}$ min.; on cross-slide, .0002 per in. Advance Products Corp., Benton Harbor, Mich. Space No. 2111.

37. Optical Jig Borer. Manex No. 2 borer is described in leaflet, with best features as good structure and advantage of optical reading. Of value also is magnetic brake. Manex Machinery Corp., N.Y., 19, N.Y. Space No. 733.



Heavy lines indicate hardened surfaces

**for greater die life —
at no extra cost —
on any make press brake**

Whether it is a simple die for angle bending or the more complex dies for any of the combined bending and forming operations, CHICAGO induction-hardened dies offer bonus performance at no extra cost. Field reports on these dies show better than ten times the useful life of the conventional dies used in press brakes. Get the full particulars on CHICAGO induction-hardened dies for your next press brake job.

Steel Bending Brakes For Over Fifty Years

4901

DREIS & KRUMP
MANUFACTURING COMPANY

7440 South Loomis Boulevard, Chicago 36, Ill.

CHICAGO
STEEL BENDING BRACKES
FOR ALL PRESS BRACKES
PRESS BRACKES

Use postpaid card. Circle No. 312

38. Portable, Metal Hardness Tester affords fast, easy, direct readings, corresponding to Rockwell or Brinell scales as described in leaflet obtainable. Newage Industries, Inc., Jenkintown, Pa. Space No. 2104.

39. Master Multi Toolholder. With the Boeni quick change toolholder, cutters can be pre-set in their respective holders with ease in a short time. Other advantages are defined in folder available from Karl A. Neise, N.Y. 16, N.Y. Space No. 1857.

40. Plating Mask Compound, Thermo-Cote N-4 (55), for clean, sharp "stop-off" lines

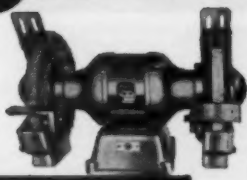
is discussed in leaflet. It is said to give positive protection against rust and corrosion for tools. Bischoff Chemical Corp., Ivoryton, Conn. Space No. 2148.

41. Electrolytic Carbide Tool Grinders. Catalog 255 describes oscillating grinder. Oscillation has two variables—both controlled by handwheels. One is stroke length from 0 to $1\frac{1}{2}$ " for up to 2" tools; the other is stroke frequency from 0 to 160 per min. Featured also is a chip breaker grinder and a combination chip breaker and cup wheel grinder. Hammond Machinery Builders, Inc., Kalamazoo, Mich. Space No. 1704.

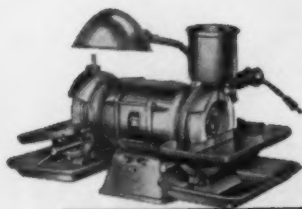
LESS VIBRATION . . . GREATER ACCURACY!

Baldor

GRINDERS



183-10" Grinder. Every part oversize and ruggedly constructed for hard, continuous use. 1 HP, 1725 RPM. Wheels: 10" x 1" x $\frac{7}{8}$ "—36 and 60 grit. Ideal for grinding large, odd-shaped pieces. \$150.00.



Carbide Tool Grinder. Sharpens quickly, accurately. Reversible $\frac{1}{2}$ HP motor withstands repeated overloads. $1\frac{1}{2}$ " wide wheels \$171.70.

Dynamically balanced Baldor Grinders provide smoother operation, far greater accuracy. Assure hours of relaxed, fatigue-free operation. Rugged . . . durable . . . the first choice of old hands who have tried 'em all.

- Lubricated for life ball-bearing motors never need servicing!
- Splash-proof, totally enclosed motors protect against dust, dirt, grit. Can't cause trouble.
- Models for every need! $\frac{1}{4}$ to 3 HP, 6" to 12" individually balanced wheels. Bench and pedestal types.
- Every model fully guaranteed.

Write for Bulletin 321-P

BALDOR ELECTRIC CO.

4353 Duncan Ave.

St. Louis 10, Mo.



Produce
MORE
Holes... Accurately
Threaded

... because these taps ARE accurate
... with squares, shanks, threads, OD's and
threads all precision machined and ground on
centers. Correctly designed for fast, free cutting.
Heat treated for longer life. Write for complete in-
formation. Ask about the custom tap service P&W
offers you at no extra cost!

PRATT & WHITNEY TAPS
A COMPLETE RANGE OF TYPES AND SIZES IS AVAILABLE
FROM STOCK AT THE P & W BRANCH OFFICE NEAR YOU.

Use postpaid card. Circle No. 314

42. "Guide for Design and Assembly of Mac-It Socket Head Cap Screws" is brochure illustrating the value of proper tightening. Mac-It Screw Div., Strong, Carlisle & Hammond, Cleveland 13, Ohio. Space No. 404.

43. **Cermet Cutting Material** has titanium carbide base with molybdenum carbide additions. As described in flyer, Firthite Grade WF is said to resist high tempera-

tures of highspeed machining operations, permitting greater cutting speeds. Firth Sterling, Inc., Pittsburgh 30, Pa. Space No. 202.

44. **Automatic Riveting Machines** are featured in Catalog No. M101. 109-J, one of the models, has 12" throat and capacity for setting two rivets up to .200" dia. at one time. Tubular Rivet and Stud Co., Wollaston 70, Mass. Space No. 1717.



(See Number 40)



(See Number 41)



(See Number 42)

45. Air and Hydraulic Cylinders. As described in folder, Spacemaker cylinders come in sizes up to 8", with strokes 1" to 20" in $\frac{1}{2}$ " increments, and cushioned or non-cushioned, for air or oil. The Tompkins-Johnson Co., Jackson, Mich. Space No. 1423.

46. Boom Truck. Leaflet available speaks of the Hydro-Boom Mod. 110, with powered hydraulic action, as positioning loads up to 2500 lb. within $\frac{1}{100}$ ". Vanguard Engineering Co., Cleveland 3, O. Space No. 1063.

47. Multi-Spiral End Mill Grinding Fixture, with 2-way cross slides, is described in flyer. A slight turn of top plate is said to change spiral lead to provide an infinite number of leads right or left hand. Spiral Step Tool Co., Chicago 25, Ill. Space No. 1475.

48. Multi-Spindle Drilling and Tapping Machine has drilling capacity $1\frac{1}{8}$ "/ $1\frac{1}{4}$ ", with Morse taper bore of spindle No. 3. As outlined in leaflet, automatic feeds of the Model AB 3/ESV are .004"-.008"-.012"

per spindle revolution. T. S. Harrison & Sons Ltd., N.Y. 7, N.Y. Space No. 1456 & 1470.

49. Magnifier With Floating Arm is described in recent leaflet, with emphasis on proper magnifications of object as enabling the eye to grasp minute details faster. Good lighting promotes safety and eases eye-strain also. Three T5 6-watt fluorescent tubes give comfortable lighting. Dazor Manufacturing Corp., St. Louis 10, Mo. Space No. 1675.

50. Toolholder designed for fast set-up, close tolerances, few parts, and less downtime is the Dex-A-Tool. The adjustable chipbreaker, in increments of .030", claims excellent chip control, as described in flyer available. Adamas Carbide Corp., Kenilworth, N.J. Space No. 1600.

51. Trimming Dies. The Brehm shimmy die trims complete in one press stroke, leaving part with clean, flat edges, according to brochure. Vulcan Tool Co., Dayton 10, Ohio. Space No. 1404.

The RIGHT thread and cylindrical Gages for EVERY application

When you select Thread or Cylindrical Gages from the complete Pratt & Whitney lines, you can be sure of the finest gage quality plus the type and design exactly right for YOUR specific needs. Results: more effective quality control, longer gage life, and lower gaging costs. And to insure prompt service, comprehensive gage stocks are carried on the shelf at the P&W Branch Office near you. Write today for fully descriptive literature. Pratt & Whitney Company, Inc., 22 Charter Oak Boulevard, West Hartford, Connecticut.



PRATT & WHITNEY

FIRST CHOICE FOR ACCURACY

MACHINE TOOLS • GAGES • CUTTING TOOLS

Because
They Cut
Longer . . .

. . . and produce more pieces with finer finishes in less time, Pratt & Whitney End Mills cost you far less in the long run. Correctly designed by men who know machine tools as well as cutting tools, they're carefully manufactured from selected steels, expertly heat treated, precision ground and rigidly inspected. Write now for complete information.

END MILLS
AVAILABLE FROM STOCK IN A COMPLETE RANGE OF TYPES AND SIZES AT THE PRATT & WHITNEY BRANCH OFFICE NEAR YOU

Use postpaid card. Circle No. 316

52. Tapping and Deburring in one operation is feature of Burr-Bit as described in flyer. By this device, which can be installed in seconds, hole is chamfered while tap is being withdrawn from workpiece. Vernon Devices, Inc., Mt. Vernon, N.Y. Space No. 1909.

53. Micrometer Adjustable Floating Reamer, sizes from $\frac{1}{2}$ "-8", has replaceable cutting blades in high speed steel and tungsten carbide, and also positive and constant float throughout range of the reamer as outlined in leaflet. The Wickman Mfg. Co., (Oak Park) Detroit 37. Space No. 1405.

54. Filters, Regulators, and Lubricators are described in folder F-15C. Tornado-like action in contoured inlet of filter hurls out impurities. Aspirator action provides greater air flow in regulators. Tabled specs. included. Watts Regulator Co., Lawrence, Mass. Space No. 967.

55. Metal Cutting Band Saw, Model 1200, has fingertip control for continuous operation, with overload and low voltage safety. Also outlined in flyer is Model 312 auto-

matic bar feed which makes band saw into heavy duty automatic cut-off machine. Wells Mfg. Corp., Three Rivers, Mich. Space No. 1713.

56. Reversible Safe-Torque Tap Driver features overload clutch which operates on overrunning roller drive that releases instantly when driving torque reaches preset limit. Flyer available from Scully-Jones & Co., Chicago 8. Space No. 1635.

57. Flush Arbors. What makes the Peterson arbor is securing the milling cutter to arbor without using a nut protruding below cutting face of the cutter. Further value is outlined in flyer from Sierra Machine Co., Berkeley, Calif. Space No. 2100.

58. Micro Projector has a 4" dia. horizontal stage on which flat work is laid, with a 14" dia. inclined screen on which image is reproduced. Further description, with accessory price list, is given in folder. George Scherr Co., Inc., N.Y. 12, N.Y. Space No. 445.

59. Metal Disc for Computing, hand size, to be used as advertising specialty is described in flyer. It permits continuous

adding or subtracting of fractions. Sheridan Advertising, Detroit 19. Space No. 960.

60. Toolroom Grinding Wheels are made up of a friable, aluminum oxide abrasive grain which is produced in single crystal form without crushing. This makes it free from inner stresses and strains, according to leaflet offered. Simonds Abrasive Co., Phila. 37. Space No. 312.

61. Turret Lathe Converters. As described in flyer, the HR-2 features individually controlled feeds for each turret position, with infinitely variable feed adjustments. Sandex Automation, Inc., Brooklyn, N.Y. Space No. 1934.

62. "Press Room Equipment" is title of catalog featuring the manufacturer's roll feeds, press feed, stock straighteners, scrap choppers, stock reels, straightening machines, among other equipment. Durrant Tool Supply Co., Providence 5, R.I. Space No. 2025.

63. Electrochemical Machine Tool, the Everite H-2, for sharpening carbides, is described in folder. It features low dia-

mond wheel wear, as well as elimination of tool rejection due to thermal cracking. Everite Machine Products Co., Phila. 25, Pa. Space No. 134.

64. Compound Angle Collet Indexing and grinding fixture is said to be ideal for flat and cylindrical grinding, light milling, etc. Spindle runs concentric within .0002". Takes standard 5C Hardinge collets, and has 1-1/16" collet capacity. Leaflet available from Eastern Machine and Tool Co., N.Y. 38, N.Y. Space No. 431.

65. Rotary Power Tool, the R-Filemaster, is designed for filing, shaping, and milling of steel, iron, aluminum, magnesium in any shape of bar stock. Flyer obtainable from Hudson Automatic Machine & Tool Co., Union City, N.J. Space No. 1055.

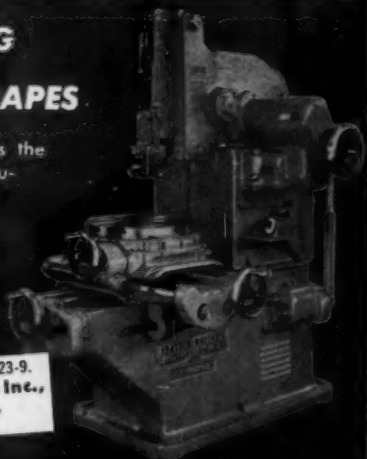
66. Precision-Built Live Centers, listed in chart form, are defined in brochure. One live center, the Perfection, for grinders, claims one-year guarantee of 2,000 hrs., cap. to 30,000 lb., and permits self-adjustment for wear. Tables provided help in the selection. J & S Tool Co., Inc., Livingston, N.J. Space No. 1501.

FASTER, EASIER HANDLING FOR IRREGULAR WORK SHAPES

THE PRATT & WHITNEY VERTICAL SHAPER is the handiest machine in any shop. Powerful, accurate and versatile, it is much more than a slotter . . . handles a wide variety of irregular shapes with speed, precision and economy. Vertical design eliminates springing, insures permanent accuracy. Cutting action helps to hold work in place.

Supplied in 2 sizes with 6" and 12" ram strokes.

Write now for Circular No. 423-9.
PRATT & WHITNEY Co., Inc.,
22 Charter Oak Blvd.,
West Hartford, Conn.



PRATT & WHITNEY

FIRST CHOICE FOR ACCURACY

MACHINE TOOLS • GAGES • CUTTING TOOLS

GRAND RAPIDS

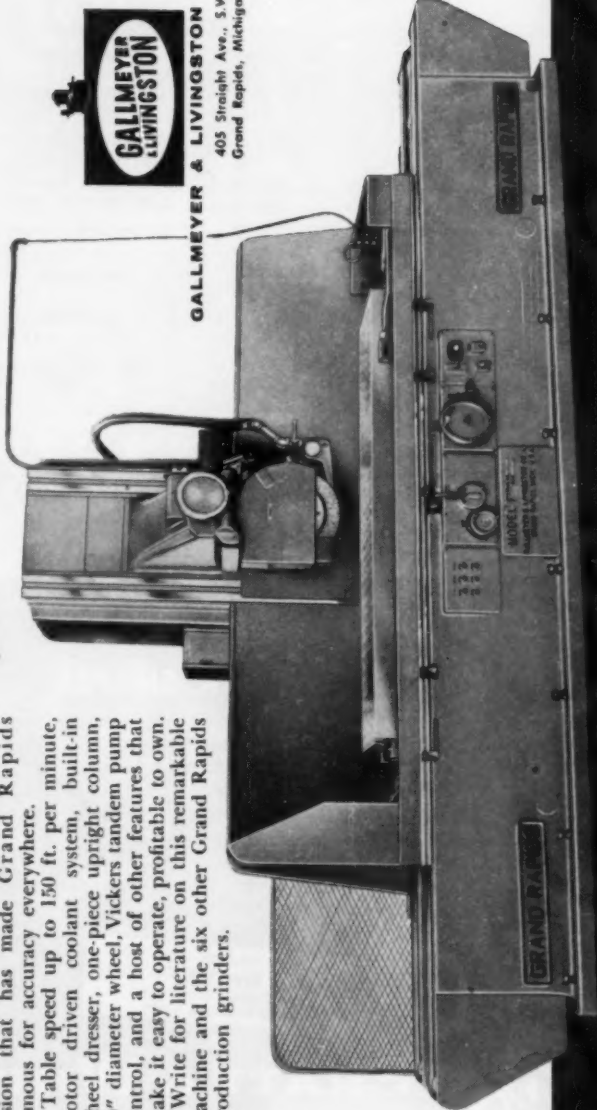
accuracy for production grinding

Now high speed, production grinding can enjoy the same Grand Rapids accuracy that's always been a "must" for the toolroom. The Grand Rapids Model F Production Type Hydraulic Feed Surface Grinder offers the same micro-metric precision that has made Grand Rapids famous for accuracy everywhere.

Table speed up to 150 ft. per minute, motor driven coolant system, built-in wheel dresser, one-piece upright column, 20" diameter wheel, Vickers tandem pump control, and a host of other features that make it easy to operate, profitable to own.

Write for literature on this remarkable machine and the six other Grand Rapids production grinders.

Grand Rapids Model F Surface Grinder accurately grinds big surfaces at unsurpassed speeds



GALLMEYER & LIVINGSTON CO.

405 Straight Ave., S.W.
Grand Rapids, Michigan

Use postpaid card, Circle No. 318

Machine Tool Builders Believe Low Point Has Been Passed

Noting that Warner & Swasey's machine tool orders for January and February of this year were "definitely stronger" than last fall, Walter K. Bailey, president, said he believes the low point has been passed both for his company and the industry. It is his opinion that manufacturers, "realizing that this is a recession and not a depression," will start sending in deferred orders. "People are beginning to determine what their business conditions are," he continued, and they're making some decisions to buy or not to buy—decisions that have been delayed by uncertainty as to general economic conditions.

"During the year (1957) our orders for textile and construction machinery held at a steady and slightly increasing level. However, the rate of new machine tool orders declined throughout the year from the very abnormally high peak of 1956 and reached what we believe to be a low point in the cycle during the fourth quarter of 1957. Looking toward 1958, it is our opinion that we have passed the low point of orders for machine tools and that their production will increase in the second quarter."

Other machine tool builders are sharing Mr. Bailey's confidence in the industry's future. National Acme Co., Cleveland, reports that new orders in February topped January by 20%. Alfred V. Bodine, president of Bodine Corp., Bridgeport, Conn., declared, "There's a much better tenor to the market. Our orders in January were

three times as good as in any month of last year's fourth quarter, and February bookings will equal January."

Other informants had this to say about prospects for an early business upturn:

"We don't look for anything like we had a year ago, but February was better than January and it looks like the beginning of more strength."—Vincent Monnot, assistant sales manager of Rockford Machine Tool Co.

"In several big firms top management has sent down orders to begin replacing old equipment where new machinery will cut production costs. These firms want to be ready to go competitively when things get rolling again."—Eastern tool producer (name withheld).

"A lot of customers are coming in lately and they seem ready to buy. The process engineer, the man we deal with, appears to have more confidence his management will let him have the money."—Richard Johnson, assistant to the president of Gisholt Machine Co., Madison, Wis.

Design Engineering Show Comes to Chicago April 14-17

The Design Engineering Show opens at the International Amphitheatre, Chicago, April 14 for a four-day run. Twenty thousand design engineers and product development executives are expected to be present to inspect the exhibits of 410 companies.

The show has been held annually since 1956—once in Philadelphia and once in New York. Exhibits will cover

ACCURATE SIZING and BETTER FINISH with W & S HOLLOW MILLS



- All I.D. Sizes Up To $\frac{3}{8}$ " (O.D. Maximum 1")
- Perfect Concentricity
- For Ferrous or Nonferrous Metals
- Diameter Tolerance $\pm .0001$ "
- Finest High-Speed Steel

"Quality Through Specialized Experience"

For complete information on the special tool design services of Woodruff & Stokes, write to:

WOODRUFF & STOKES CO.



INCORPORATED

Bldg. 32, 353 Lincoln Street,
Hingham, Massachusetts

Use postpaid card. Circle No. 319

an area of 125,000 sq. ft., making it four times the size of the first show and 50 percent larger than the second. The products and displays are valued at more than ten million dollars, with about 12,000 separate products on exhibit.

1958 Powder Metallurgy Show and Meeting

The fourteenth annual meeting of the Metal Powder Association will feature a Powder Metallurgy Show, which will be devoted to the latest developments in the field. In conjunction with the Show—to be held at the Sheraton Hotel in Philadelphia, April 21-23—technical sessions will cover new production techniques as well as the most recent information on applications and properties of powder metallurgy parts.

Two new fields for metal powders will receive special attention at the technical sessions: missile and rocket fuels; corrosion resistant surfacing.

Potential exhibitors and visitors are invited to contact Kempton H. Roll, executive secretary, Metal Powder Association, 130 W. 42nd St., New York 36, N.Y.

Bryant Joins Ex-Cell-O

The Bryant Chucking Grinder Co. recently became a subsidiary of Ex-Cell-O Corp. Bryant was organized in Springfield, Vt. in 1909. Its chief products are internal grinders. Other products include thread and groove gages, surface plates and components for computer systems. Bryant is the parent organization of E. G. Staude, Inc., manufacturer of box making equipment and a line of rotogravure presses for printing on box board.

As part of the Ex-Cell-O organization Bryant will continue to operate under its present management. It is felt that through the combination of facilities and skills the products of Bryant can be expanded for a better and more economical coverage of the market.

AWS Welding Show Opens April 15 at St. Louis

A \$2,500,000 display, claimed to be the largest collection of welding equipment and accessories ever gathered under one roof, will be unveiled at Kiel Auditorium, St. Louis, Tuesday, April 15, for a three-day showing. The exposition, sponsored by the American Welding Society, with 128 companies participating, will cover an area of 33,664 square feet.

Accompanying the show will be a week-long technical session, April 14 to 18, at the Hotel Statler, in St. Louis, where 63 papers will be presented in 21 sessions. Ninety-five authors, drawn from 15 states and Canada, will participate. The metals engineering division of the American Society of Mechanical Engineers will co-sponsor four of the 21 sessions.

Automation Exposition Set for New York in June

The New York Coliseum will be the scene of the Fourth International Automation Exposition and Congress June 9 through 13. For the first time, a Military Automation Exposition will be a part of the over-all International Automation Exposition. A section of the second floor main show area will be specially set aside for exhibits of products designed for military applications or produced to meet military type specifications.

Two previous international automation expositions were held in New York, in 1954 and 1957, while one was held in 1955 at Chicago's Navy Pier.

Hours of the Fourth International Automation Exposition will be from two to nine p.m. from Monday, June 9, through Thursday, June 12. Hours on Friday, June 13, will be two to six p.m.

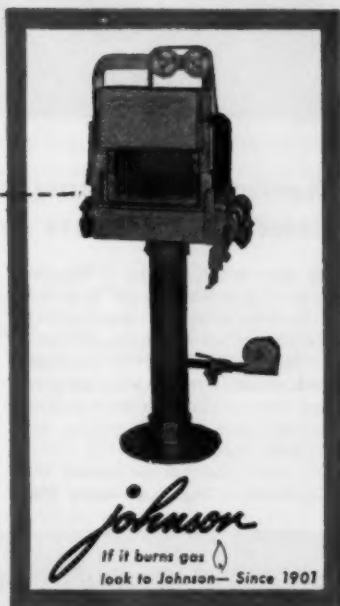
HEATS FAST SAVES TIME

johnson
NUMBER 142 HEAT TREATING FURNACE

Powerful burners in this efficient furnace get heat up to the 1300°-2350° F. range in minutes. Temperatures accurately and quickly regulated. Does fast job with high speed and carbon steels. Ratchet-operated door opens upward. High temperature, refractory-lined firebox is 7" by 13" by 16½". 200,000 BTUs per hour. Carbofrax hearth, G.E. Motor and Johnson Blower included, F.O.B. Factory....\$358.00

Write today for free Johnson Catalog

JOHNSON GAS APPLIANCE COMPANY
570 E Avenue NW, Cedar Rapids, Iowa



Use postpaid card. Circle No. 320

Chicago-Latrobe Carbide Bore Reamers help boost Rambler production



Reaming and chamfering in one trouble-free operation increases production on American Motors cylinder head line

Big news in the industry is the sales climb of American Motors' Rambler. At Rambler's Kenosha plant, the line is operating at capacity to meet demand.

Chicago-Latrobe Service Engineers work regularly with AM to get more and more production with greater precision into all their drilling and reaming operations. In the photo, four guide bushings are reamed and chamfered at one time—using Chi-

cago-Latrobe Carbide Bore Reamers. This unusual setup is saving time . . . keeping vital parts moving.

C-L tools for difficult drilling and reaming jobs may answer some production problem in your plant. Ask a Chicago-Latrobe distributor to bring in a C-L Service Engineer. Regardless of the size of your operation, he's at your disposal without cost or obligation.



CHICAGO-LATROBE

418 W. ONTARIO STREET, CHICAGO 10, ILLINOIS
ORDER THROUGH YOUR LOCAL C-L STOCKING DISTRIBUTOR

DRILLS • REAMERS • END MILLS • COUNTERSINKS • COUNTERBORES • CARBIDE TOOLS

Use postpaid card, Circle No. 324

The
Complete
Drill and
Reamer
Line



Thirty-five thousand expected in Philadelphia for 1958 ASTE Tool Show and Annual Meeting

Tooling for Competition



Nearly 500 industrial exhibits—representing over \$10,000,000 in the latest production equipment, machines, machine tools, accessories, processes, services and aids—will be on display, occupying 155,000 square feet of Philadelphia's Convention Center at the ASTE Tool Show and Annual Meeting, May 1-8. Over 100 technical papers will be read by author-experts throughout the 8-day meeting, providing answers and information on a wide variety of production problems.

"Tooling For Competition" is the timely theme of the Tool Show and Conferences. In outlining the details of the event, Harry E. Conrad, ASTE Executive Secretary, said, "American industry is interested in obtaining the tools it will need to meet the stiff competition in the days ahead."

New Developments Unveiled

An outstanding feature of the Philadelphia event will be the great number of new machines, tools, and processes which will be unveiled for the first time. Conrad said numerous exhibitors had advised him they were rushing work on new equipment in order to

have it ready for the ASTE show.

Newest types of cutting tools, ultra-fast and extreme-precision machine tools and their accessories, giant presses, and the latest developments in workholding and other devices will be on display. All are designed to increase precision production, while relieving operators from manual drudgery.

An entire hall of the Convention Center will be occupied by manufacturers of precision gauging and inspection equipment ready to demonstrate newest means and methods of attaining and maintaining the high quality control accuracy needed to meet stiff competition.

Throughout the other halls will be found the newest in metal cutting machines and tools for faster machining both of the standard materials and of the new tougher materials coming into use in industry today. Grinding and finishing equipment and supplies, presses, abrasives, cutting fluids—just about everything used in the fabricating industry will be displayed.

Technical Conferences

Continuing its policy of presenting

timely conferences and discussions on the latest technical developments and production problems, ASTE has arranged for over 100 technical papers and panel discussions to be presented.

Two special symposia—Numerical Control, and Tooling For Metal Powder Parts—will be conducted, and a Metal-Cutting Review Seminar, providing a comprehensive review of existing basic information on metal-cutting, will also be held.

Topics for the conferences range

throughout the entire field of manufacturing processes from first design of the production to its final inspection okay. Some dramatic highlights will be: tooling behind the guided missile production, automation for the small plant, metal-cutting research, diamond tools, titanium and European tool engineering. Production problems will be analyzed. Practically all of the "stiff competition" technical developments will be covered by at least one technical paper. . . .

Program of Conferences

THURSDAY, May 1

TOOL ENGINEERING FOR AIRCRAFT PRODUCTION I

3:00 P.M., Ballroom, Convention Center
Chairman: Joseph J. McDevitt, Chief Industrial Engineer, C. H. Wheeler Mfg. Co.

"Magnesium in Aircraft Tooling" (Paper No. 46), by KARL F. MELDE, Tool Engineer, Boeing Airplane Co.

"A Tool Engineer's Approach to the B-58 Weapon System" (Paper No. 47), by RALPH A. FUHRER, Chief Manufacturing Engineer, Convair Div., General Dynamics Corp.

TOOL ENGINEERING FOR AIRCRAFT PRODUCTION II

8:00 P.M., North Garden, Bellevue-Stratford Hotel
Chairman: Edwin V. C. Kapp, Glenn L. Martin Co.

"Weight Savings in the Manufacture of Aircraft Engine and Missile Parts by Cold Roll Forming from Thick to Thin Material" (Paper No. 51), by ARTHUR A. MERRY, Chief, Advanced Tool Engineering, and JOHN G. CAMPBELL, Project Engineer, Pratt & Whitney Div. of United Aircraft Corp.

"Safety Engineering as a Function of Human Engineering" (Paper No. 52), by MAX A. PAPE, Senior Research Engineer, Missile Systems Div., Lockheed Aircraft Corp., R. W. FAUBION, Human Engineering Specialist, North American Aviation and NIKKI KAYE, Kaye-Pape Associates.

PLASTIC TOOLING

9:30 A.M., Room 200, Convention Center

Chairman: Donald B. Spatz, York-Shipley, Inc.
"For Tools and Dies—New Epoxy-Fiber Compositions" (Paper No. 55), by A. P. MAZZUCHELLI, Assistant Director of Development Laboratories, Bakelite Co., Union Carbide Corp.

"Our Experience in the Use of Plastic for Making of Duplicate Die Models, Engineering Checking Fixtures and Prototype Tools" (Paper No. 56), by A. E. VALLIER, Executive Engineer Body Fabricating Metals Stamping Group, and H. L. WYATT, Manager, Die Model and Template Dept., Ford Motor Co.

"Shell Molding and Tool Engineering" (Paper No. 57), by OTTO W. WINTER, Manager, Shell Molding Div., Beardsley and Piper, Div. of Pettibone Mulliken Corp.

STEEL—FORGINGS AND EXTRUSIONS

9:45 A.M., Ballroom, Convention Center
Chairman: Robert L. Smith, Chief Tool Engineer, Carbide Die Mfg. and Tool Crib Service, Standard Pressed Steel Co.

"Steel Forgings, Why and How" (Paper No. 63), by A. O. SCHAEFER, President, Pencoyd Steel & Forge Corp.

"Design Features and Cost Benefits of Hot Extruded and Cold Drawn Steel" (Paper No. 62), by R. L. HUGO, Senior Sales Engineer, Jones & Laughlin Steel Corp.

FRIDAY, May 2

NUCLEAR ENGINEERING

2:00 P.M., Ballroom, Convention Center
Chairman: James E. McAleer, Chief Inspector, Nuclear Products, Erco Div. ACF, Inc.

"Standardization in The Nuclear Industry" (Paper No. 64), by DR. HENRY H. HAUSNER, Vice President Nuclear Engineering, Penn-Texas Corp.

"Unique Aspects of Nuclear Component Manufacture" (Paper No. 63), by H. C. AMTSBERG, Engineering Manager, Atomic Fuel Dept., Westinghouse Electric Corp.

CUTTING TOOLS

2:30 P.M., Room 200, Convention Center
Chairman: Donald Betts, Supervisor, Product & Methods Engineering, Standard Pressed Steel Co.

"Tool Steel Toughness—Rated by a New Method of Measurement" (Paper No. 66), by GARY STEVEN, Acting Supervisor, Central Research Laboratory; A. E. NEHREBERG, Manager, Product Research and V. D. CHANDHOK, Staff Engineer, Tool Steel Section, Crucible Steel Co. of America.

"Basic Developments in Carbide Tooling" (Paper No. 67), by W. L. KENNICOTT, Vice President Engineering, Kennametal, Inc.

CERAMIC TOOLS

8:00 P.M., Burgundy Room, Bellevue-Stratford Hotel

Chairman: Charles R. Skord, Manager, Quality Control, Standard Pressed Steel Co.

"New Developments in High Velocity Machining" (Paper No. 68), by WALLACE B. KENNEDY, Chief, Experimental Machining Branch, Rodman Laboratory, Ordnance Corps, Watertown Arsenal.

"Characteristics and Experimental Performance of Certain New Ceramic Tool Compositions" (Paper No. 69), by A. G. KING, Research Engineer, and W. M. WHEILDON, Senior Engineer, Research & Development Dept., Norton Co.

TOOL ENGINEERING RESEARCH I

8:15 P.M., Oak Room, Bellevue-Stratford Hotel
Chairman: Humbert Di Paul, Training Coordinator, Standard Pressed Steel Co.

"Role of Research and Development in Gear and Spine Production Equipment" (Paper No. 70), by RICHARD S. HILDRETH, Chief Engineer, Michigan Tool Co.

"Research Report on High-Speed Circular Sawing of Aluminum Alloys" (Paper No. 71), by O. H. NUSS, Research & Development Engineer, DeWalt Div., American Machine & Foundry Co.

SATURDAY, May 3

GENERAL TOOL ENGINEERING I

9:45 A.M., South Garden, Bellevue-Stratford Hotel

Chairman: Fred G. Holzhausen, Field and Service Engineer, Lepel High Frequency Laboratories, Inc.

"Static Switching for the Mechanical Engineer" (Paper No. 73), by ARTHUR H. WOLFSON, Manager, Research & Development, Gage Div., Pratt & Whitney, Inc.

"Vitrifiable Silicate Tooling for High Temperature Plastics" (Paper No. 74), by J. D. STILLMAN, Tool Development Technician, Manu-

facturing Development, Convairst Div., General Dynamics Corp.

METAL-CUTTING RESEARCH I

10:00 A.M., North Garden, Bellevue-Stratford Hotel

Chairman: Fred H. Glanding, University of Pennsylvania

"Mechanism of Chip Formation in Metal-Cutting" (Paper No. 75), **"Some Thermal and Physical Aspects of Metal-Cutting"** (Paper No. 76.)

Both papers by DR. DONALD N. GIDEON, Experimental Physicist, DR. RALPH SIMON, Consultant, and DR. HORACE J. GROVER, Chief, Mechanical Engineering Dept., Applied Mechanics Div., Battelle Memorial Institute.

SURFACE FINISHES

1:30 P.M., South Garden, Bellevue-Stratford Hotel

Chairman: LeRoy S. Paulsen, Assistant General Superintendent, Link-Belt Co.

"Gear Tooth Honing—a New Approach to Improving Gear Surface Finish" (Paper No. 77), by B. F. BREGI, Vice President, National Broach & Machine Co.

"Obtaining Specified Finishes by Honing" (Paper No. 78), by B. R. MCCONNELL, Sr., Honing Engineer, Sunnen Products Co.

METAL-CUTTING RESEARCH II

2:00 P.M., North Garden, Bellevue-Stratford Hotel

Chairman: George E. Smith, District Manager, Kennametal, Inc.

"Present Knowledge of Cutting Fluids" (Paper No. 79), by S. L. COSGROVE, principal Chemist, Chemical Research, and ROY W. GREENLEE, Assistant Consultant, Chemistry Dept., Battelle Memorial Institute.

"Influence of Metallurgical Properties on Metal-Cutting Operations" (Paper No. 80), by FRANCIS W. BOULGER, Chief, Div. of Ferrous Metallurgy, Battelle Memorial Institute.

SATURDAY, May 3

GENERAL TOOL ENGINEERING II

8:00 P.M., South Garden, Bellevue-Stratford Hotel

Chairman: George L. Cummings, Sales Engineer, Machine Tools, W. E. Shipley Machinery Co.

"New Manufacturing Techniques for Hydraulic Servo Valves" (Paper No. 81), by EDGAR M. HAKANSON, Manager, Machine Tool Div., Sheffield Corp.

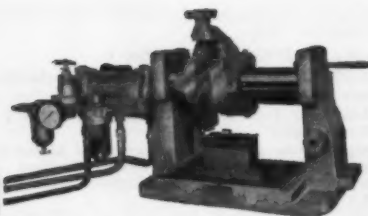
"The Use of Ultrahigh-Speed 150-horsepower Lathe for Machinability Studies" (Paper No. 82), by H. J. SIEKMANN, Manager, Applied Mechanics Engineering, Metallurgical Products Dept., General Electric Co.

METAL-CUTTING RESEARCH PANEL

8:30 P.M., Rose Garden, Bellevue-Stratford Hotel

Chairman: Francis W. Boulger, Chief, Div. of Ferrous Metallurgy, Battelle Memorial Institute (Constitutes Paper No. 83)

Professor L. V. Colwell, Dept. of Production



PRECISION

MARKING

at low cost

The ACROMARK Model 9A Marking Machine provides a fast means for marking steel, other metals and materials by the line contact method, essentially eliminates poor markings or inaccuracies. Your shop air line provides the power (75 p.s.i. and up) and the operation is quiet with no stamping or jarring problems.

ACROMARK Model 9A Machines are standard with strokes from 6" to 14". Clearance under head is from 6" to 7¾" front, 3½" to 5" rear. Back is open for extending parts or high production line adaptation. Hand and Motor models also standard. Famous for wide adaptability and long life.

"Inventors and manufacturers of more than 300 kinds of marking machines — largely standardized. Specify ACROMARK to get the right machine for the job."

Write now for Catalog No. 9 and send sample or sketch of parts to be marked for engineers recommendation — without obligation. We furnish dies, machine and everything.

ACROMARK
Company

15 Morrell St., Elizabeth, N.J.

"The Original Marking Specialists"

Use postpaid card. Circle No. 329

ASTE EXPOSITION . . .

Engineering, College of Engineering, University of Michigan.

E. L. Fowler, Research & Development Div., International Nickel Co., Inc.

R. E. McKee, Training Director, R. K. LeBlond Machine Tool Co.

Professor Kenneth J. Trigger, Dept. of Mechanical Engineering, University of Illinois.

Norman Zlatin, Partner, Metcut Research Associates.

MONDAY, May 5

NUMERICAL CONTROL SYMPOSIUM I

9:30 A.M., Ballroom, Convention Center
Chairman: Emil Kitzman, General Superintendent, Colmar Plant, Link-Belt Co.

"Numerical Control: Facts and Fallacies" (Paper No. 84), by T. W. BLACK, Senior Associate Editor, THE TOOL ENGINEER Magazine
"Numerical Control" (paper No. 85), by R. V. BENAGLIO, Research Laboratories Division, Bendix Aviation Corp.

TOOL ENGINEERING RESEARCH II

9:45 A.M., Room 300, Convention Center
Chairman: Howard W. Gross, Dean of Spring Garden Institute

"A New Approach to Some Relationships in the Theory of Metal-Cutting" (paper No. 86), by DR. MAX KRONENBERG, Consulting Engineer.

"Machine Tool Dynamometers, Their Design and Application" (paper No. 87), by ERIC K. HENRIKSEN, Project Manufacturing Research Engineer, Manufacturing Research & Development Dept., Convair Div., General Dynamics Corp.

GENERAL TOOL ENGINEERING III

10:00 A.M., Room 200, Convention Center
Chairman: Herbert W. Yeager, Jr., Chief Process and Jig Design Engineer, The Budd Co.

"Automatic Size Control For Centerless Grinders" (paper No. 88), by ARTHUR PARNES, Project Engineer, Airborne Instruments Laboratory, Inc.

"The Significance of the Surface Finish Produced by Electro-Discharge Machining" (paper No. 89), by CHARLES H. GOOD, Plant Manager, Micrometrical Development Corp.

NUMERICAL CONTROL SYMPOSIUM II

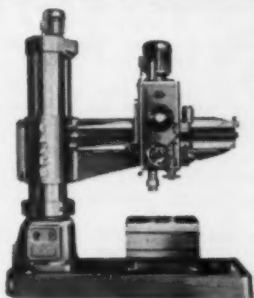
1:30 P.M., Ballroom, Convention Center
Chairman: Carl A. Bufflap, Jr., SKF Industries, Inc.

"Machine Tool As The Controlled Element" (paper No. 90), by J. R. BALLINGER, Manager, Research Laboratories Division, Bendix Aviation Corp.

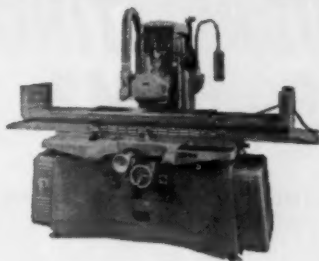
"Potential of Numerical Control in Manufacturing Operations" (paper No. 91), by L. S. Peck, Applications Engineer, Autonetics Division, North American Aviation, Inc.

**HIGH QUALITY
BETTER SERVICE**

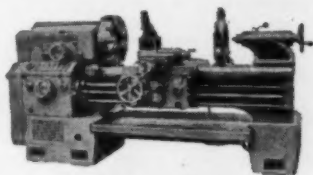
**Visit us at the ASTE Show
Booth No. 1320**



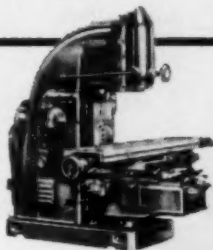
CASER RADIAL DRILLS
DRILLING CAPACITY $1\frac{1}{2}$ " to 4"
from $2\frac{1}{2}$ ' to 8' ARM



**BLOHM HYD. HORIZONTAL
SURFACE GRINDERS**
14"x20" to 20"x60"



**MORANDO HEAVY DUTY
ENGINE LATHES**
10 to 65 H.P. From 20" to 70" SWING



**MASERATI HORIZONTAL AND
VERTICAL MILLING MACHINES**
SIZES 1, 2, 3 and 4

Our Complete Line of HIGH PRECISION MACHINE
TOOLS include:

- UNIVERSAL SHEARING & PUNCHING MACHINES
- HORIZONTAL BORING MILLS
Table type from 2" to 6" diam.
Floor type from 4" to 8" diam.
- VERTICAL BORING MILLS
From 36" to 8' table diam.
- PLANERS
Table size up to 8'x33'
- UNIVERSAL TOOL & CUTTER GRINDERS
#0, 1 and 2
- TOOL ROOM LATHES
12" Swing
- AUTOMATIC SINGLE POINT THREADING ATTACH-
MENT FOR LATHES
- HYDRAULIC DUPLICATORS
for Lathes, Milling Machines, Planers and Boring
Mills

Distributors in Principal Cities
Dealer Inquiries Invited



Write for full information to:
MASERATI CORP. OF AMERICA
46 Sea Cliff Avenue
Glen Cove, L. I., N. Y.

What is your LUBRICATING PROBLEM?

☐ **LATHE CENTER LUBRICATION**
SCORING-GALLING

☐ **GRINDING CENTERS**
LUBRICANT WASHOUT

☐ **DRAWING**
SCORE MARKS-DIE WEAR

☐ **STEADY RESTS**
WORK PIECE DAMAGE

☐ **PRESS FITS**
SCORING-SEIZING

☐ **DIE POSTS**
WEAR-FREEZING



CMD Lube has solved many like it with excellent results. Perhaps CMD will be your answer, too!

**CHECK AND
SEND IN FOR
SAMPLE**

Anti-Scoring Lubricant
**CHICAGO MANUFACTURING
AND DISTRIBUTING CO.**

1906 West 46th Street, Chicago 9, Illinois

Use postpaid card. Circle No. 331

ASTE EXPOSITION . . .

TUESDAY, May 6

NUMERICAL CONTROL SYMPOSIUM

9:30 A.M., Ballroom, Convention Center
Chairman: Edward F. Miller, Production Superintendent, SKF Industries, Inc.

"Numerical Control For Templates and Dies", (paper No. 96), by DR. DARWIN H. BINGHAM, Jr., Supervisor, Numerical Control Programming Section, Giddings & Lewis Machine Tool Co.
"Production Experience on Numerically Controlled Machine Tools" (paper No. 97), by F. BOOTH, Research Laboratories Division, Bendix Aviation Corp.

METAL POWDER PARTS SYMPOSIUM I

9:30 A.M., South Garden, Bellevue-Stratford Hotel

Chairman: Cecil L. Clerk, Field Engineer, Jones & Lamson Machine Company

"The Effects of Structural Part Design on Tooling for Sintered Metals Fabrication" (paper No. 98), by FRANK J. DEMAINE, Associate Engineer, Sintered Metal Laboratory, International Business Machine Corp.

"Process Selection and Economics" by PROFESSOR GREGORY J. COMSTOCK, Powder Metallurgy Laboratory, Stevens Institute of Technology. (Paper not printed.)

DIAMOND TOOLS II

9:45 A.M., Room 300, Convention Center
Chairman: James Harris, Assistant Manager, Tooling and Quality Control, Standard Pressed Steel Co.

"Oriented Diamonds Give Maximum Performance in Formed Dressing Tools" (paper No. 99), by JOSEPH KLIPPER, Vice President and General Manager, Clipper Diamond Tool Co., Inc.

"The Oriented Vector in Diamond Dressing Tools" (paper No. 100), by HAROLD C. MILLER, Chief Research Engineer, Super-Cut, Inc.

NEW DRILLING TECHNIQUES

10:00 A.M., Room 200, Convention Center
Chairman: William Reber, Chief Tool Engineer, Homelite Div., Textron, Inc.

"The Spiral Point Drill—A Self-Centering Drill Point Geometry" (paper No. 101), by HANS ERNST, Research Consultant and W. A. HAGERTY, Research Supervisor, Cincinnati Milling Machine Co.

"Production Drilling and Reaming of Precision Holes With Gun-Type Tools" (paper No. 102), by HERBERT GREGG, Chief Engineer, Star Cutter Co.

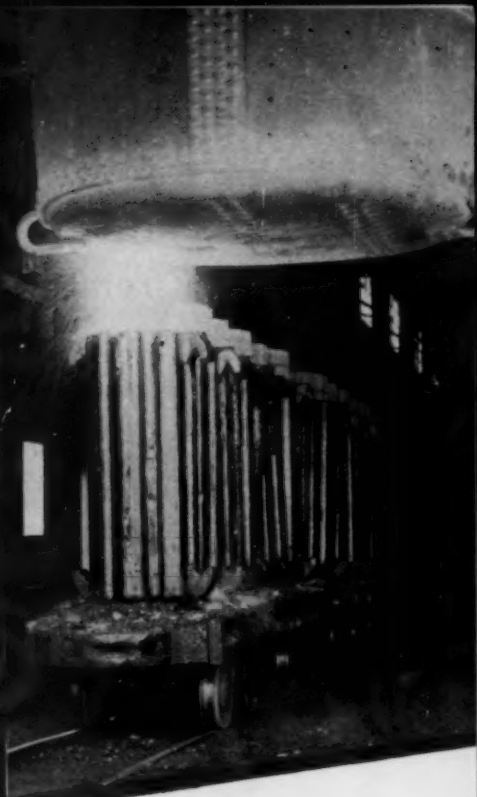
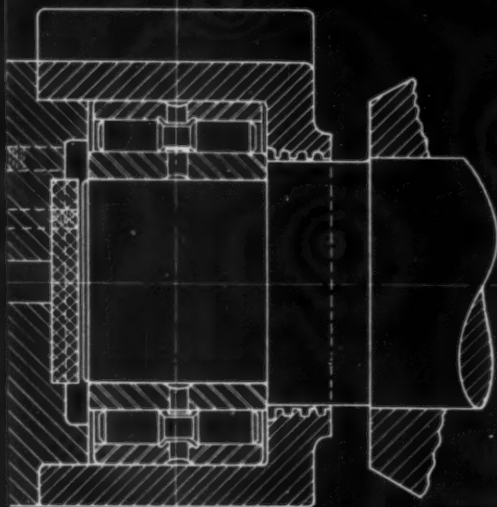
DIAMOND TOOLS III

3:00 P.M., Room 300, Convention Center
Chairman: Joseph L. Geist, Lester, Pennsylvania

"A Rapid Method for Setting Oriented Diamonds In Tools" (paper No. 103), by R. G. WEAVIND, Director of Research, C. J. GUYKERS and A. R. ROY, Crown Mines.

"The Orientation of Diamonds for Tools by Means of an X-Ray Image Intensifier Tube" (paper No. 104), by DR. J. F. H. CUSTERS, Director of Research, Diamond Research Laboratory, Crown Mines.

MACHINE and TOOL BLUE BOOK



Bearings, Inc. engineering service ... solves another bearing problem

Ingot mold cars for a large tube mill were continually out of service due to the short life of babbitt, bronze or other bearings originally supplied in the cars.

The Trouble? Bearings, Inc. engineers found shock loads far beyond the capacities of the original bearings. Extreme wear on bearings due to excessive skewing, bent axes and uneven track.

The Answer. Shown above is the Bearings, Inc. drawing of the installation that replaced the original bearings. It has greatly increased load capacity and no dimensional change is required in the shaft or bearing housing.

The Result. The new bearing is designed on a new prin-

ciple that keeps rollers in line and eliminates skewing. Shock loads due to uneven tracks have little effect on our installation for its construction makes possible a greater number of rollers available to support the load at all times.

This is just one of the many such problems we have solved for our customers. In all cases we supply only bearings we are authorized to distribute. They are new and come to you fresh in the manufacturers' boxes.

If you have a bearing problem or need replacement bearings in a hurry—call or write our branch nearest you, they're ready to give fast service.

Providing bearing service
in the North»

and

in the South»

BEARINGS, INC.

OHIO: Akron • Canton • Cincinnati • Cleveland • Columbus • Dayton • Ellettsville • Hamilton • Lima • Lorain • Mansfield • Toledo • Youngstown • Zanesville
INDIANA: Ft. Wayne • Indianapolis • Muncie • Terre Haute • PENNSYLVANIA: Erie • Johnstown • Philadelphia • Pittsburgh • York
WEST VIRGINIA: Charleston • Huntington • Parkersburg • Wheeling • NEW JERSEY: Camden
NEW YORK: Buffalo, Balaban Corp. • MARYLAND: Baltimore • DELAWARE: Wilmington

DIXIE BEARINGS, INC.

FLORIDA: Jacksonville • GEORGIA: Atlanta • KENTUCKY: Louisville • LOUISIANA: Baton Rouge • New Orleans
N. CAROLINA: Charlotte • GREENSBORO • S. CAROLINA: Greenville • TENNESSEE: Chattanooga • Kingsport • Knoxville • Nashville

Use postpaid card. Circle No. 332

STUBBORN

broken pipes
studs and screws
easily removed

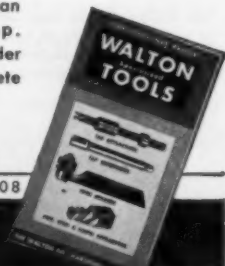
**WITH REPS PIPE &
STUD EXTRACTORS**
MAKES STRONG FOUR POINT
GRIP WITHOUT HAMMERING

A specialized tool that
creates a powerful
pulling bite without
reaming. Hardened
steel—will remove
any material.



In sizes for
every pipe $\frac{1}{8}$ "
to 2", every
stud and screw
 $\frac{3}{16}$ " to $3\frac{1}{2}$ ".

Take advantage of Wal-
ton's 30-day free trial
to investigate the labor
savings that this simple
specialized tool can
effect in your shop.
Write for Data Folder
#12 giving complete
details.



Use postpaid card. Circle No. 333

ASTE EXPOSITION . . .

METAL POWDER PARTS SYMPOSIUM II
3:00 P.M., South Garden, Bellevue-Stratford
Hotel

Chairman: George Foster, Carbide Application
Engineer, Standard Pressed Steel Co.

"Presses For Powder Metallurgy" (paper No.
105), by JAMES J. KUX, Vice President and
General Manager, Kux Machine Co.

"Briquetting Tools" (paper No. 106), by
ROBERT A. KOEHLER, Metallurgist, Research
Dept., Powder Metal Division, and J. N. SMITH,
Tool Engineer in Charge of Powder Metal
Tools, National Cash Register Co.

"Metal Powders and The Tool Engineer" (paper
No. 107), by WILLIAM L. BATTEN, Manager
Powder Metallurgy Department, Vanadium Al-
loys Steel Co.

NUMERICAL CONTROL SYMPOSIUM IV

3:15 P.M., Ballroom, Convention Center

Chairman: William C. Stewart, SKF Industries,
Inc.

"Contouring Control From Numerical Data"
(paper No. 108), by JOHN W. WILSON, Project
Engineer, Development Research Department,
Cincinnati Milling Machine Co.

"The Tool Engineer and Tape Preparation"
(paper No. 109), by H. H. SCHATZ, Research
Laboratories Division, Bendix Aviation Corp.

NUMERICAL CONTROL SYMPOSIUM V

8:00 P.M., Independence Room, Sheraton Hotel

Chairman: Frank B. Higgins, Production Man-
ager, Department of Production Control, C. H.
Wheeler Mfg. Co.

"Numerical Control—First Year Statistics"
(paper No. 110), by BERNARD GAIENNIE, Ad-
ministrator, Research & Development, Northrop
Aircraft, Inc.

"Programming for Numerical Control" (paper
No. 111), by CARL B. PERRY, Supervisor, Plant
Engineering, Douglas Aircraft Co., Inc.

EUROPEAN TOOL ENGINEERING

8:30 P.M., Pennsylvania Room, Sheraton Hotel

Chairman: James L. G. FitzPatrick, Professor
and Head of Dept. of Mechanical Technology,
Staten Island Community College

**"Recent European Metal-Cutting Investiga-
tions"** (paper No. 112), by PROFESSOR
MILTON C. SHAW, Dept of Mechanical Engi-
neering, Massachusetts Institute of Technology.

"Tool Engineering in Europe" (paper No. 113),
by J. W. GREVE, Editor, THE TOOL ENGINEER
Magazine.

METAL POWDER PARTS SYMPOSIUM III

8:30 P.M., South Garden, Bellevue-Stratford
Hotel

Chairman: D. H. Renfrew, Chief Engineer, Link-
Belt Co.

"Sintering Structural Parts" (paper No. 114),
by JOHN H. SPECK, Chief Metallurgist, Amplex
Division, Chrysler Corp.

"Finishing Operations" (paper No. 115), by
PETER E. YOUNG, Research Metallurgist, Met-
allurgy Department, Scientific Laboratory, Ford
Motor Co.

WEDNESDAY, May 7

AUTOMATION I

9:30 A.M., Ballroom, Convention Center

Chairman: William Briner, Standard Pressed Steel Co.

"Machinery and Automation" (paper #116), by J. C. KEEBLER, Managing Editor, Automation Magazine.

"Automation—The Manufacturing, Sales, Engineering Triangle" (paper #117), by WILLIAM C. ALLEN, Manufacturing Director, Headquarters Manufacturing Dept., Westinghouse Electric Corp.

TITANIUM I

9:45 A.M., Room 200, Convention Center

(Titanium problems—design considerations—machining—applicability of cold extrusion process—results of compression tests)

Chairman: A. P. Collier, Steam Div., Westinghouse Electric Corp.

"On Machining Titanium" (paper #118), by G. W. BAUER, Staff Metallurgist, Mallory Sharon Titanium Corp.

"Design Considerations for Cold Extrusion of Titanium" (paper #119), by ALVIN M. SABROFF, Assistant Chief, ROCCO A. SANNICANDRO, Research Engineer, PAUL D. FROST, Chief, Light Metals Div., Battelle Memorial Institute.

CUTTING TOOL MATERIAL II

10:00 A.M., Room 300, Convention Center

Chairman: William K. Neff, Sales Representative, Allegheny Ludlum Steel Corp.

"Cutting Tool Materials of the Future" (paper #120), by WILLIAM REICH, Manager, Advance Engineering, Metallurgical Products Dept., General Electric Corp.

"Today's Cutting Tool Materials" (paper #121), by GEORGE A. ROBERTS, Vice President—Technology, Vanadium-Alloys Steel Company.

AUTOMATION II

1:30 P.M., Ballroom, Convention Center

Chairman: James P. Wearn, Steam Div., Westinghouse Electric

"Types of Automatic Assembly Equipment" (paper #122), by LLOYD L. LEE, Director of Automation, LeMaire Tool & Mfg. Company

"Automation Manufacturing with the Integrated Line" (paper #123), by DON A. CARGILL, President, Cargill Detroit Corp.

GENERAL TOOL ENGINEERING IV

2:00 P.M., Room 200, Convention Center

Chairman: Arthur R. Diamond, Engineering Consultant, Philadelphia, Pa.

"Gaging Screw Threads For Acceptability" (paper #124), by ERIC G. GABBEY, Owner, O-Vee Gauge Co.

"Frictional Behavior of Metals and Plastics" (paper #125), by DR. A. O. SCHMIDT, Research Engineer, Kearney & Trecker Corp., and ELMER J. WEITER, Assistant Professor of Mechanical Engineering, College of Engineering, Marquette University.

April, 1958

THE BEST PORTABLE ELEVATING TABLE YOU CAN BUY . . . (Eliminates Cranking)



*2000 LBS. OR 1000 LBS. CAPACITIES
*ILLUSTRATED

A precision made
MIDWEST TABLE
Costs no more!

- ✓ It's hydraulic . . . positions work or feeds at desired height without use of hands
- ✓ Rigid cast construction
- ✓ Top turns 360° and clamps
- ✓ Foot release valve to lower
- ✓ Machined top surface can be used as work table
- ✓ Roller bearing casters with ball bearing swivels
- ✓ Floor clamping available extra

Write today . . . specials on request

MIDWEST

TOOL & ENGINEERING CO.

112 WEBSTER ST., DAYTON 2, OHIO

Use postpaid card. Circle No. 334

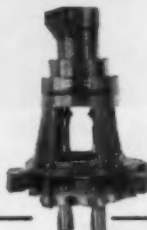
Only

THRIFTMASTER Universal Joint Type DRILL HEADS

have these exclusive* features

*Standard Full Ball Bearing Construction, including Spindles

Driving assembly is Full Ball Bearing mounted with 3 Bearings on each spindle. Thrust load carried by radial thrust bearings.



*Standard Slip-On and Slip-Off Template Construction

For accurate setting and locating spindle brackets are machined to receive slip-on and slip-off template.

6 Standard Models . . . Models U-608 and U-1000—Ball Bearing. Models U-620B and U-1012B—Plain Bearing, 11/16" or 1/2" min. centers. Models U-608-BS and U-1000-BS—Ball Bearing Gear Case, Plain Spindles.

Semi-Standard Heavy Duty Full Ball Bearing . . . 1/2" in Cast Iron—1-7/16" min. centers—7 1/8" or 9 3/4" dia.

1/2" in Steel—1-13/16" min. centers—7" or 9 3/4" dia.

Also Larger Adaptations and Full Line of Fixed Center Drill Heads.

WRITE FOR FULL INFORMATION



Also Makers of
BORMAN AUTOMATIC REVERSE TAPPERS
Use postpaid card. Circle No. 335

ASTE EXPOSITION . . .

CREATIVE STANDARDIZATION

2:30 P.M., Room 300, Convention Center

(A four-member panel discussion sponsored by the ASTE National Standards Committee)

Moderator: Samuel H. Watson, Manager, Corporate Standardizing Div., R.C.A.

Speakers: DR. ALLEN V. ASTIN, Director, National Bureau of Standards, U.S. Dept. of Commerce; W. C. BUDGE, Manager of Sales, Atomic Power Activity, Westinghouse Electric Corp.; ROY TROWBRIDGE, Director of Engineering Standards, General Motors Corp., and LEO B. MOORE, Associate Professor of Industrial Management, Massachusetts Institute of Technology.

THURSDAY, May 8

AUTOMATION III

9:30 A.M., South Garden, Bellevue-Stratford Hotel
Chairman: Samuel Pershing Grant, Nuclear Products, Erco Div., ACF, Inc.

"High Production Automation through Low-Speed Mechanisms" (paper No. 126), by JULIAN WILLE, Chief Advance Mechanization Engineer, Motorola, Inc.

"Application of Weldamotion Techniques to Welding Processes" (paper No. 127), by JOHN H. BREMS, Project Engineer, Welding Machine Div., Expert Die & Tool Co., Inc.

GENERAL TOOL ENGINEERING V

9:45 A.M., North Garden, Bellevue-Stratford Hotel

Chairman: John H. Zeder, Jr., Chief Die Designer, The Budd Company

"Capacity of Lathe Chucks" (paper No. 128), by E. J. WELLER, Manager, Carbide Products Design Engineering, General Electric Company
"What Will Mechanical Tool Holders Do For You?" (paper No. 129), by HAROLD E. YORK, Carbide Product Design Engineering, Metallurgical Products Dept., General Electric Co.

"Economic Advantages of Progressive Dies" (paper No. 130), by GEORGE E. GAULT, Tool and Die Maker, Ehrhardt Tool & Machine Co.

AUTOMATION IV

1:30 P.M., South Garden, Bellevue-Stratford Hotel

Chairman: Michael R. Lettieri, Red Bank Div., Bendix Aviation Corp.
(Constitutes Paper No. 131)

"Simplified Setups For Job Shop Automation", by RAYMOND SOLLOHUB, Manufacturing Engineer, and ROBERT COEN, Manufacturing Specialist, General Purpose Motor Dept., General Electric Co.

"Automated Special Machines for Low Production Parts" by HOWARD N. MAYNARD, President, Snyder Tool & Engineering Company
"Can the Small Plant Afford Automation?", RALPH ESHELMAN, Engineering Editor, Iron Age Magazine.

"Automation as Applied To Small Lot Production" by WERNER O. MILLER, Chief of Automation, Textile Machine Works.

First Metal-Cutting Review Seminar

THURSDAY, May 1

9:00 A.M. Registration—Coffee

10:00 A.M. "Economic Importance of Chip Making," (Paper No. 43), HANS ERNST, Research Consultant, Cincinnati Milling Machine Co.

10:20 A.M. "What is Known Today About Metal Cutting," (Paper No. 44), FRANCIS W. BOULGER, Chief, Division of Ferrous Metallurgy, Battelle Memorial Institute.

11:00 A.M. "Metal-Cutting Forces," (Paper No. 45), PROF. PRESCOTT A. SMITH, Dept. of Mechanical Engineering, Massachusetts Institute of Technology.

3:00 P.M. "Cutting Tool Geometry," (Paper No. 48), S. W. LOVEJOY, Manager, Engineering and Research, Cutting Tool Div., Pratt & Whitney Co., Inc.

3:30 P.M. "Machinability Testing," (Paper No. 49), DAVID N. SMITH, Manager, Research Division, Jones & Lamson Machine Co.

4:15 P.M. "Cutting Fluids," (Paper No. 50), E. L. H. BASTIAN, Staff Eng., Shell Oil Co.

8:30 P.M. "Tool Life," (Paper No. 53), by PROF. L. V. COLWELL, Dept. of Production Engineering, College of Engineering, University of Michigan.

9:00 P.M. "Microstructure as it affects Machinability," (Paper No. 54), NORMAN ZLATIN, Partner, Metcut Research Associates, and JOHN V. GOULD, Project Engr., Metcut Research Assoc.

FRIDAY, May 2

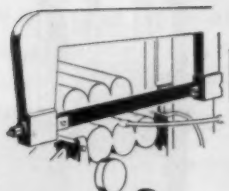
9:30 A.M. "Single Point Turning," (Paper No. 58), ALBERT B. ALBRECHT, Research Engineer, Monarch Machine Tool Co.

10:00 A.M. "Drilling Technology," (Paper No. 59), CARL J. OXFORD, JR., Director of Research, National Twist Drill Co.

10:45 A.M. "Milling Practice Today," (Paper No. 60), DR. A. O. SCHMIDT, Research Engineer, and J. R. ROUBIK, Research Engineer, Kearney & Trecker Corp.

11:15 A.M. "Tool Grinding," (Paper No. 61), CARL SODERLUND, Research & Development Department, Norton Co.

8:30 P.M. "Metal-Cutting Review Seminar Panel," (Paper No. 72), D. G. JONES, Assistant Chief Engineer, Kennametal, Inc.; R. E. McKEE, Training Director, R. K. LeBlond Machine Tool Company; R. T. HOOK, Chief Metallurgist, The Warner & Swasey Company; DR. W. W. GILBERT, Manager, Machinability Development, General Electric Company.



**Capewell
High Speed
Power Hack
Saw Blades
can take
higher
speeds
and
feeds
for
higher
production
and
profit**



**3 TYPES
FOR
EVERY
PURPOSE**



See Your Capewell Distributor



**THE CAPEWELL MFG. CO.
HARTFORD 2, CONN.**

Use postpaid card. Circle No. 336



SAVE SPACE WITH A SERIES # 8055 COMBINATION MODEL

Two independent furnaces (hardening and drawing) in the same floor space one requires. Complete with independent controls. Hardening furnace available in both a 2000° and a 2300° F. range.

Drawing furnace has a maximum of 800° F.* Quench tank included with the exception of the largest standard model.

MODEL	H x W x L	2000°F	2300°F
8055 A	6"x 6"x 12"	\$ 865.00	\$ 975.00
8055 B	9"x 9"x 18"	1325.00	1450.00
8055 C	12"x 12"x 24"	1850.00	1950.00
8055 D	18"x 18"x 36"	2750.00	2875.00

*Also available up to 1250° F.

WRITE FOR FREE LITERATURE, SPECIFICATIONS and price list of Lucifer Furnaces in wide range of sizes —top loading and side loading types. Engineering advice without obligation. Write, wire or phone today.

LUCIFER

FURNACES, INC.

NESHAMINY 1, PA.

Phone Diamond 3-0411

Use postpaid card. Circle No. 337

ASTE EXPOSITION . . .

PLANT TOURS

FRIDAY, May 2

- Tour No. 1** 8:15 A.M.
Leeds & Northrup Company
North Wales Plant
Limit: 50 visitors
- Tour No. 2** 8:45 A.M.
Schramm, Incorporated
West Chester
Limit: 37 visitors
- Tour No. 3** 9:15 A.M.
Fischer & Porter Company
Hartboro
Limit: 100 visitors
- Tour No. 4** 12:30 P.M.
Minneapolis-Honeywell Regulator Company
Brown Instruments Division
Limit: 25 visitors
- Tour No. 5** 12:30 P.M.
The Budd Company
Red Lion Plant
Limit: 50 visitors
MUST BE U. S. CITIZENS
- Tour No. 6** 1:00 P.M.
Curtis Publishing Company
Curtis Park Plant
Sharon Hill
Limit: 75 visitors

MONDAY, May 5

- Tour No. 7** 8:00 A.M.
United States Steel Corporation
Fairless Works
Limit: 50 visitors
- Tour No. 8** 8:30 A.M.
Standard Pressed Steel Company
Jenkintown
Limit: 100 visitors
- Tour No. 9** 9:15 A.M.
United States Naval Base
Philadelphia Naval Shipyard
Limit: 200 visitors
NO CAMERAS PERMITTED
- Tour No. 10** 11:30 A.M.
Chrysler Corporation
Plymouth Division
Delaware Assembly Plant
Limit: 50 visitors
- Tour No. 11** 12:15 P.M.
Campbell Soup Company
Camden
Limit: 40 visitors
- Tour No. 12** 1:00 P.M.
Curtis Publishing Company
Curtis Park Plant
Sharon Hill
Limit: 75 visitors

TUESDAY, May 6

- Tour No. 13** 8:30 A.M.
Standard Pressed Steel Company
Jenkintown
Limit: 100 visitors
- Tour No. 14** 8:45 A.M.
The Budd Company
Hunting Park Plant
Nictown
Limit: 50 visitors
MUST BE U. S. CITIZENS

Save now by replacing your old arbors and quick-change chucks under the new Scully-Jones "Tool Modernization Plan"

Introducing: NEW Safety-Guard Collet



Collet rotates freely within the Safety-Guard.

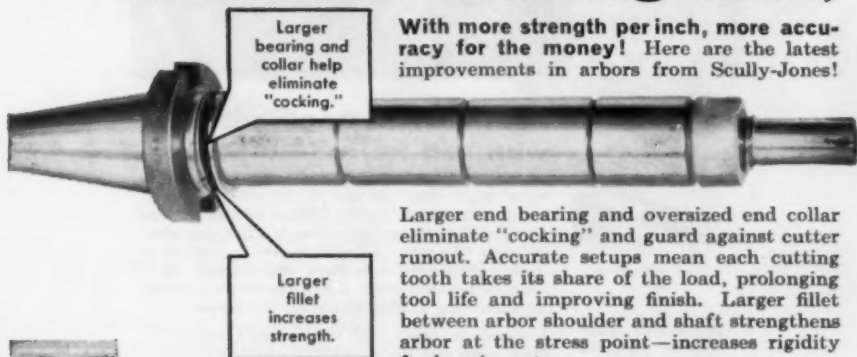
Operator holds guard, not the rotating collet.

Illustration of one-hand removal

To prevent accidents and breakage on radial drills and drill presses. Now, you don't have to handle rotating collets when changing tools on single-spindle machines. The new Safety-Guard acts as a "free-running bearing" between the operator's hand and the collet. The flared lip prevents heavy tools from slipping and reduces the danger of breaking cutting tools.

Answers critical need at high spindle speed. A heavy cutting tool requires a firm grip when inserting a collet in a chuck. At high spindle speeds, the collet is hard to handle. But, with Safety-Guard, the operator just inserts the collet and lets it pick up torque quickly, but gradually. The drive balls seat themselves easily and surely.

NEW Blue-Band Milling Arbor,



Larger bearing and collar help eliminate "cocking."

Larger fillet increases strength.

With more strength per inch, more accuracy for the money! Here are the latest improvements in arbors from Scully-Jones!

Larger end bearing and oversized end collar eliminate "cocking" and guard against cutter runout. Accurate setups mean each cutting tooth takes its share of the load, prolonging tool life and improving finish. Larger fillet between arbor shoulder and shaft strengthens arbor at the stress point—increases rigidity for heavier cuts.

Blue-Band means blue chips—Get longer cutter life, and most of all, maximum running time on your milling machines, by equipping your plant with Blue-Band arbors—they cost no more.

LIMITED TIME OFFER

Ask your Scully-Jones representative about the "TM" Plan for replacement of obsolete chucks, collets, and arbors at a saving.



SCULLY-JONES and COMPANY

1907 So. Rockwell Street, Chicago 8, Illinois

PHONE: Bishop 7-5900

Use postpaid card. Circle No. 338



PLANT TOURS continued

Tour No. 15 9:15 A.M.
United States Naval Base
 Philadelphia Naval Shipyard
 Limit: 200 visitors
 NO CAMERAS PERMITTED

Tour No. 16 10:00 A.M.
Simonds Abrasive Company
 Division of Simonds Saw and Steel Company
 Limit: 37 visitors

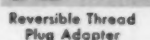
Tour No. 17 12:00 Noon
United States Steel Corporation
 Fairless Works
 Limit: 50 visitors

Tour No. 18 12:30 P.M.
Link-Belt Company
 Nicetown
 Limit: 40 visitors

Tour No. 19 1:00 P.M.
I-T-E Circuit Breaker Company
 Special Products Division
 Limit: 100 visitors
 MUST BE U. S. CITIZENS



Thread Ring Adapter



Reversible Thread Plug Adapter



Taper Lock Plug
Mount in tapered sleeves

Mechanize your Thread Gaging with Taft-Peirce Rotochek. Takes A.G.D. standard thread plug (taper shank and reversible), and thread ring gages. Rotochek is also adaptable to many special thread gaging problems. Call on Taft-Peirce for advice.

Cut Thread Gaging Costs with Taft-Peirce Rotochek®

Push! Pull! And the part is inspected! Thread gaging is as simple as that when you mechanize with the Taft-Peirce Rotochek. It's fast, accurate and easy to use . . . actually makes it possible to triple your thread inspection rate, increase sampling, or perform 100% parts inspection — without sacrificing quality or adding manpower.

Available in bench and flexible shaft models. A slight push and the gage rotates in, release pressure and Rotochek stops, pull and it disengages. Special clutch-controlled power does all the work.

Want more information? This is your opportunity to take a real cost-saving look at your gaging operation. Send for Bulletin #612 with complete description and prices.

TAKE IT TO

TAFT-PEIRCE



WOONSOCKET, RHODE ISLAND

WEDNESDAY, May 7

Tour No. 20 8:00 A.M.
United States Steel Corporation
 Fairless Works
 Limit: 50 visitors

Tour No. 21 8:30 A.M.
Standard Pressed Steel Company
 Jenkintown
 Limit: 100 visitors

Tour No. 22 9:15 A.M.
United States Naval Base
 Philadelphia Naval Shipyard
 Limit: 200 visitors
 NO CAMERAS PERMITTED

Tour No. 23 12:30 P.M.
Link-Belt Company
 Nicetown
 Limit: 40 visitors

Tour No. 24 1:00 P.M.
I-T-E Circuit Breaker Company
 Circuit Breaker Division
 Limit: 100 visitors
 MUST BE U. S. CITIZENS

Tour No. 25 1:00 P.M.
The Yale & Towne Mfg. Company
 Yale Materials Handling Division
 Limit: 40 visitors

BEST
 FOR
**UPSETTING
 PIERCING
 EXTRUDING
 FORCING**



**PRODUCES MORE AND
 BETTER PIECES BETWEEN
 DIE CHANGES.**

A graphited product for use in working hot metals of all kinds. Good in temperatures up to 2200° F and above. Keeps work cool and extends the life of dies and punches. Highly adhesive, may be applied by brush or swab or diluted with oil for spraying.

Bulletins describing Fiske's 514A Hot Die Lubricant and other specialty lubricants and coolants sent on request.



**METAL WORKING
 LUBRICANTS**

FISKE BROTHERS REFINING CO.

129A LOCKWOOD STREET, NEWARK 5, N.J.

Plants: Newark 5, N. J. and Toledo 5, Ohio

Use postpaid card. Circle No. 340

PLANT TOURS continued

Tour No. 26 1:15 P.M.
The Cuneo Eastern Press, Incorporated
 of Penn.
 Limit: 25 visitors

THURSDAY, May 8

Tour No. 27 8:15 A.M.
Leads & Northrup Company
 North Wales Plant
 Limit: 50 visitors

Tour No. 28 9:15 A.M.
United States Naval Base
 Philadelphia Naval Shipyard
 Limit: 200 visitors
 NO CAMERAS PERMITTED

Tour No. 29 10:00 A.M.
Simonds Abrasive Company
 Division of Simonds Saw and Steel Company
 Limit: 37 visitors

Tour No. 30 1:00 P.M.
The Yale & Towne Manufacturing Company
 Yale Materials Handling Division
 Limit: 40 visitors



You too can enjoy the proven superiority of Mystic Mist cooling . . . for one machine or a complete centralized system installation. This modern method of cooling permits increased production . . . better finishes . . . and tremendous savings in tool costs.

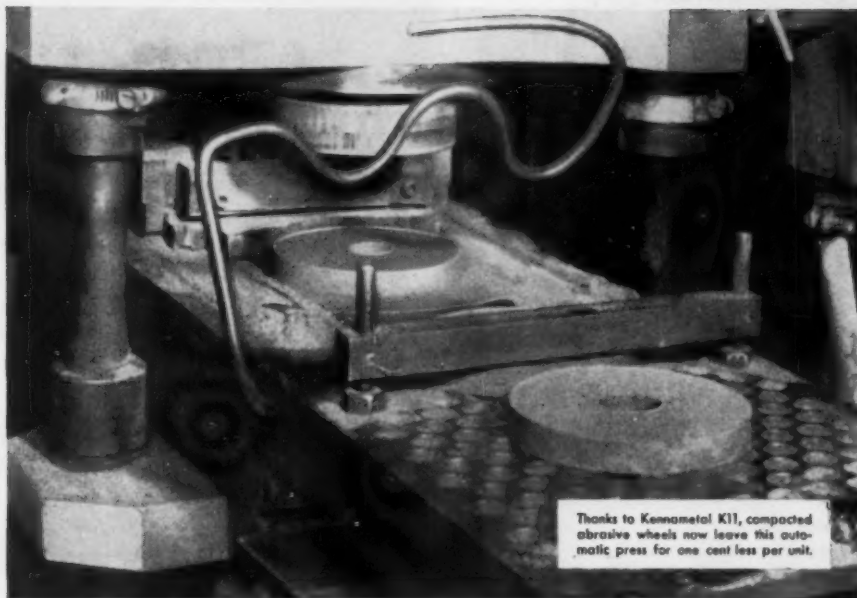


Write for complete details today or see your local Mystic Mist dealer.

AETNA MFG. CO.
 177 S. York St., Bensenville, Ill.
 Phone: PORTer 6-3810

Use postpaid card. Circle No. 341





Thanks to Kennametal K11, compacted abrasive wheels now leave this automatic press for one cent less per unit.

With KENNAMETAL'S* Grade K11...

a penny saved every time the die is opened

In an effort to reduce the unit cost of compacted abrasive wheels, The Garborundum Company searched for a die material that would better withstand the unusually severe wear to which the dies are subjected. Experiments with Kennametal Die Grade K11 indicated great savings could be made... and later production records have proved it. Dies now last twice as long as previous carbide dies... and five to ten times longer than those made from high-carbon, high-chrome steel. From an average cost of 1.4 cents for the high-carbon high-chrome steel dies, unit cost has now dropped to .4 cents using Kennametal Grade K11.

In addition to reducing your unit costs through extended die life and low maintenance, Kennametal Die Grades bring you additional benefits through their ability to hold close tolerances for greater product uniformity.

Get more information on the six grades of Kennametal's "90" series or the three exclusive, non-galling "90" series... a total of nine Die Grades developed to meet every die need, including yours.

*Trademark

5103



Upper and lower halves of the die for compacting abrasive wheels from silicon carbide grit. Hard-working punch on the right and the mold or "liner" shown in center are now made from Kennametal.

Why not find out what Kennametal can do for the critical wear parts of your operation? Consult your die supplier, your Kennametal Die Engineer, or write: KENNAMETAL INC., Latrobe, Pennsylvania.



INDUSTRY AND
KENNAMETAL
...Partners in Progress

List of Exhibitors

COMPANY	SPACE NO.	COMPANY	SPACE NO.
A			
AA Gage Co.	532	The Apex Tool & Cutter Co.	509
Aaron Machinery Co.	1571	Armstrong Bros. Tool Co.	308
Accurate Bushing Co.	1825	The Aro Equipment Corp.	1810
Ace Drill Bushing Co., Inc.	2052	Arwood Precision Casting Corp.	628
Ace Drill Corp.	432	Assoc. American	
Adamas Carbide Corp.	1600	Trading Div.	512
Adcock & Shipley, Ltd.	1456	Atlantic Machine Tool Works	1914
Advance Products Corp.	2111	ATSCO	2134
Aero Service Corp.	433	Austin Industrial Corp.	1471
Airborne Instrument Lab.	1918	Auto Load, Inc.	335
Airetool Mfg. Co.	1340	Automatic Switch Co.	1838
Alameda Gage Co.	409	B	
Alina Corp.	1774	Eric R. Bachmann Co., Inc.	704
Alkon Products Corp.	1154	Barber-Colman Co.	1255
Almco Division	2101	Barer Eng'g. & Machinery Co. ..	1370
Aloris Tool Co., Inc.	2045	Barker Engineering Co.	1258
Alsop Engineering Corp.	1062	Barry Controls, Inc.	716
Alzmetall Machine		Bausch & Lomb Optical Co.	119
Tool Factory	1456	Beaver Tool & Engineering	829
AMF DeWalt, Inc.	1572	Bedford Gear &	
AMF Tool Division	1164	Machine Products	2208
American Cam Co., Inc.	1067	Bendix Aviation Corp.	936
American Coldset Corp.	1860	Besly-Welles Corp.	632
American Cystoscope Makers ..	334	Bischoff Chemical Corp.	2148
American Drill Bushing Co.	1749	Black Drill Co., Inc.	1051
American Herforder Corp.	1307	Blackhawk Manufacturing Co. ..	413
American Machinist	105	Black & Webster, Inc.	1457
American Pullmax Co., Inc.	1722	Edward Blake Co., Inc.	1646
American SIP Corp.	1734	E. W. Bliss Co.	528
American Standards Assoc.	1910	Henry P. Boggis & Co.	1058
B. C. Ames Co.	227	Boice Gages	234
Amplex Division	1839	Bokum Tool Co., Inc.	414
Anderson & Sons, Inc.	613	Boyar-Schultz Corp.	1539
Anderson Oil & Chemical Co. ..	331	Branson Ultrasonic Corp.	745
R. B. Annis Co.	1077	Bridgeport Machines, Inc.	1705

ANOTHER CUSHMAN AIR CHUCK AT WORK

See our new products
booth 1439
ASTE EXPOSITION



CUSHMAN CHUCKS,
a product of American quality,
labor and materials.

Sold through
your industrial
distributor.



THE CUSHMAN CHUCK COMPANY

hartford 2 conn.

ADAMAS DEX-A-TOOL cuts machining costs

Only Dex-A-Tool gives you all 10 modern design features... features that mean faster set-up, closer tolerances, fewer parts, and less downtime.



<p>1 Fully adjustable chipbreaker... in increments of .001\"</p>	<p>2 Extra thick carbide inserts... thickest chunk-supported inserts in the industry. The thick insert in Dex-A-Tool gives more rigidity to throwaways and provides the ideal platform for maximum insert performance.</p>	<p>3 Easy indexing... clamp locking screw may be loosened from bottom as well as top. Simplifies insert indexing when holder is upside down.</p>	<p>4 Holds both "thick" and "thin" inserts... allows you to utilize economical thin inserts ($\frac{1}{8}$") wherever possible and still maintain the advantage of switching to thick inserts ($\frac{3}{16}$") whenever necessary.</p>	<p>5 Chipbreaker Clamp Facet with Thick Carbide... provides much more wear resistance than thin carbide coating or cast alloy clamp.</p>
<p>6 Setcrew chipbreaker clamp... permits fast positive resetting of chipbreaker after insert indexing. Nylon plug engages the setcrew and prevents any loosening of setcrew.</p>	<p>7 Combination chipbreaker-clamp... single unit construction means no loose chipbreakers to fall out. Inventories reduced. Simpler use gives a savings in production time.</p>	<p>8 Aseal invertible as well as indexable... extra thickness of insert allows countersinking of both sides. This permits insert to be inverted for extra life.</p>	<p>9 Special high temperature brazing alloy... used in brazing carbide chipbreaker to clamp. Prevents brazing failure during high machining temperatures.</p>	<p>10 Carbide or steel inserts... your choice of carbide or copper plated hardened high speed steel inserts.</p>

No other toolholder has fewer parts than Adamas Dex-A-Tool... none are easier to operate. Dex-A-Tool's features add up to more production per insert corner. Measure this extra savings on your own machines... plan a test of Adamas Dex-A-Tool today!

For additional Dex-A-Tool literature, an actual demonstration tool, or a free copy of "Throwaway Tooling Set-up and Follow Thru" write:

Dept. 562



ADAMAS
CARBIDE CORPORATION,
KENILWORTH, N. J.
PRODUCERS OF TUNGSTEN
CARBIDE TOOLS, TOOL TIPS,
DIES, WEAR PARTS,
DEX-A-TOOL AND CERALOX.

Team Dex-A-Tool with Adamas throwaway inserts and gain top performance under varying machining conditions... top performance possible only through Adamas wide range of quality controlled grades.



Use postpaid card. Circle No. 3-D

ASTE EXPOSITION . . .

COMPANY	SPACE NO.
Briney Manufacturing Co.	203
The Bristol Co.	1447
British Industries Corp.	1238
Brown & Sharpe Mfg. Co.	122
Charles Bruning Co., Inc.	345
Bryant Gage & Spindle Division	123
Buck Manufacturing Co.	2141
Buck Tool Co.	804
Buckeye Tools Corp.	705

C

The Carpenter Steel Co.	725
Carr Lane Mfg. Co.	1066
Carter Controls, Inc.	1244
Case-Maul Mfg. Co., Inc.	1365
Cawi Machine Co., Inc.	972
Cerro De Pasco Sales Corp.	1270
The Challenge Machinery Co.	1073
Champion Pneumatic Mchy. Co.	405
Charmilles Engineering Works ..	1942
Chicago Pneumatic Tool Co.	1804
Chicago Tramrail Corp.	1745
Cincinnati Milling Machine Co. ..	1555
Cincinnati Sub Zero Products	976
Circular Tool Co., Inc.	326
Cities Service Petroleum, Inc. ..	108
Robert H. Clark Co.	1901
Cleco Air Tool Division	1871
Clementina, Ltd.	1938
Cleveland Cutter & Reamer Co.	637
Cleveland Grinding Machine Sales	838
Cleveland Instrument Co.	953
Cogsdill Tool Products, Inc.	1243
Collins Microflat Co.	400
Colonial Manufacturing Co., Inc.	1169
Columbia International Corp.	1356
Commander Mfg. Co.	945
Connecticut Tool & Engineering ..	1860
Conover Mast Publications, Inc.	600
Cooper Weymouth, Inc.	1357

COMPANY	SPACE NO.
Covel Manufacturing Co.	136
Arthur A. Crafts Co., Inc.	115
Crodian & Co.	1853
Crystal Lake Grinders	1453
The Cushman Chuck Co.	1439
Custanite Corp.	2043
Cycledynamics, Inc.	1024

D

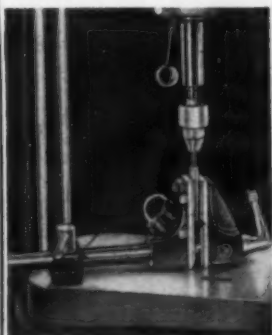
Dake Corp.	1744
Davis Boring Tool Div.	1517
A. G. Davis Gage & Engineering	144
Dayton Perforators, Inc.	2106
Dazor Manufacturing Corp.	1675
Denison Engineering Div.	1012
Detroit Reamer & Tool Co.	1054
Detroit Stamping Co.	1353
Devcon Corp.	2004
DeVlieg Microbore Div.	1549
Diamond Machine Tool Corp.	620
Eugene Dietzgen Co., Inc.	1735
The DoAll Co.	604
Doerr Electric Corp.	1335
The Dow Chemical Co.	1653
Drillmation Co.	1371
The du Mont Corp.	139
Durant Tool Supply Co.	2025

E

Easco Products Division	1805
Eastern Machine & Tool Co.	431
Eastman Kodak Co. (Camera Wks.)	208
Eclipse Counterbore Co.	344
The Electromark Corp.	1156
Elox Corp. of Michigan	935
Enco Manufacturing Co.	504
Encyclopaedia Britannica	966
Engelberg Huller Co., Inc.	1604
Engis Equipment Co.	218
Equipto Division	975
Erickson Tool Co.	805

ASTE EXPOSITION . . .

COMPANY	SPACE NO.	COMPANY	SPACE NO.
Errington Mechanical Lab.	1076	G	
ESBEC Barrel Finishing Corp. ..	954	The Gaertner Scientific Corp.	426
Everite Machine Products Co.	134	The Gairing Tool Co.	318
F		Galland-Henning Mfg. Co.	834
FAC Div. of Overseas Comm. ..	1700	The Gammons-Hoaglund Co.	500
Falcon Tool Co.	213	Gardner-Denver Co.	1930
Fawick Airflex Division		Gardner-Publication, Inc.	633
of The Fawick Corp.	513	Gay-Lee Co.	1919
The Fellows Gear Shaper Co. ..	1820	General Electric Co.	1770
Ferguson Machine Corp.		James W. George Mchy. Co. ..	1456
of Ind.	605	Russell T. Gilman, Inc.	1016
Fidelity Tool Supply	1761	The Giustina Corp. of America ..	2152
Wm. H. Field Co., Inc.	962	Govro-Nelson Co.	2145
Firth Sterling, Inc.	202	Graham Machine Tool Co.	1721
Fonda Gage Co., Inc.	2119	Graymills Corp.	1214
Foster Supplies Co.	2001	Green Instrument Co., Inc.	1065
Farane Plastics, Inc.	1072	Greist Manufacturing Co.	145
		Grob, Inc.	520



AMF Wahlstrom Automatic Keyless Chuck:

Convert 95% of lost tool-changing time to productive time. A single chuck does the work of several spindles. The greater the load, the tighter the grip. No stopping of the spindle to change tools.

AMF Float-Lock Instant Change Vise:

Positive anchoring on drill press table. *Floats and Locks* in any position. Holds work safely for accurate drilling and tapping.

NOW: TWO WAYS TO INCREASE PRODUCTION

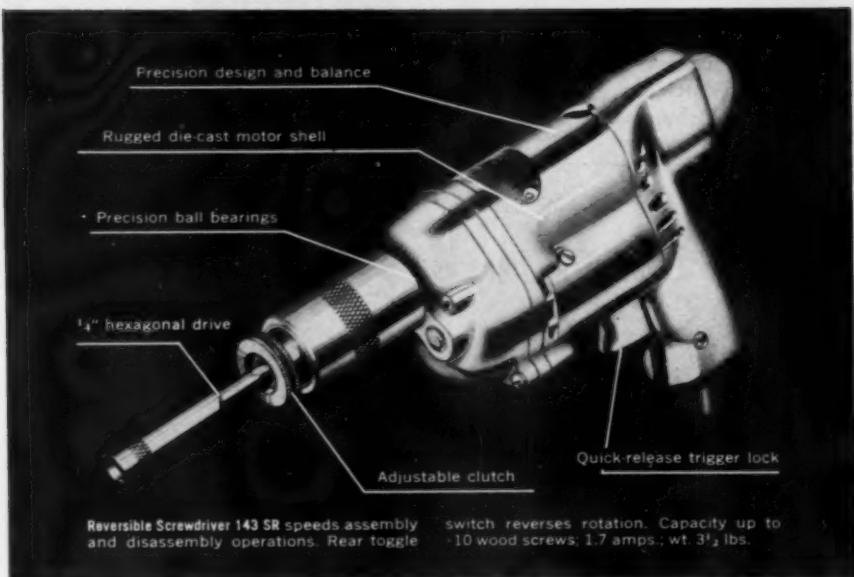
*Write for details and name
of nearest distributor.*

AMF Tool Division

AMERICAN MACHINE & FOUNDRY COMPANY

224 Glenwood Avenue, Bloomfield, N. J.

POWER to boost job efficiency with REMINGTON tools



Flexible Shaft Machine 8 FGP for grinding or sanding has full 360° swiveling pedestal base, 6' shaft, 3 HP motor geared to operate at 4,500 rpm.



Grinder, PG 508S; air-powered; 6" wheel capacity; 6,000 rpm at 90 psi pressure; governor for even speed; steel motor housing takes rough handling.

Here are power, speed and maneuverability to cut time on the tough jobs. Remington Power Tools are precision-built for long service, minimum maintenance. Choose the power most efficient for you. Remington tools are available in air, electric or gasoline-driven models. Your local Remington dealer offers complete information. See him today!

Specifications subject to change without notice.

Remington *Mall®*

MALL TOOL COMPANY

Division of Remington Arms Company, Inc., Bridgeport 2, Conn.

In Canada: Mall Tool, Ltd., 36 Queen Elizabeth Blvd., Toronto, Ontario.

Use postpaid card. Circle No. 344

COMPANY	SPACE NO.	COMPANY	SPACE NO.
Grobet File Co. of America, Inc.	2121	Handy & Harman	244
Gulf Oil Corp.	313	Hanna Engineering Works	713
Guthery Machine Tool Corp.	1204	Hansford Manufacturing Corp. ..	961
H		Harco Engineering	428
Hamco Machines, Inc.	2146	Harig Manufacturing Corp.	1027
Hamilton Watch Co.	1925	T. S. Harrison & Sons, Ltd.	1456
Hammond Mchy. Builders, Inc. ..	1704	Hause Machines, Inc.	1150
		Heinrich Tools, Inc.	1252



SAWS
for the
PRICE of

... use the **WELLS 49A**
for Horizontal Cut-off
and Vertical Band Sawing

The Wells 49A is a dual-purpose machine designed for shop or "job-site" work. As a horizontal cut-off saw, the 49A has a capacity of $3\frac{1}{2}$ " x 6". Swing the head to vertical position . . . it's an upright band saw. No tools required! Use it for cutting angles, slots, notches, bevels and light contour work.

The 49A can save time and money for you. Let your local Wells Distributor show you how . . . or write direct for complete information.



The Pioneers of Horizontal
**METAL CUTTING
BAND SAWS**
WELLS MANUFACTURING CORPORATION
707 Coolidge Ave. • Three Rivers, Mich.

Use postpaid card. Circle No. 345

MACHINE and TOOL BLUE BOOK

NOW

**you can afford
rapid, precision
optical inspection**

COVEL

Optical COMPARATOR

Only
\$985⁰⁰



**SEND FOR
DESCRIPTIVE
BULLETIN BB-48**

Now every shop can enjoy the advantages of precision optical gaging and inspection. Covel No. 14 Optical Comparator outmodes mechanical checking methods, prevents costly errors, saves time and money!

The Covel Comparator is easy to use, even in brightly lighted shop areas. Has large 14" diameter screen and 6" horizontal stage travel. Rugged, precision construction throughout.

COVEL

**PRECISION
GRINDERS**

BENTON HARBOR, MICHIGAN

COVEL OFFERS THE WIDEST CHOICE IN SURFACE GRINDERS UP TO 14"x24". CUTTER AND TOOL GRINDERS. DRILL GRINDERS. OPTICAL COMPARATORS.

Use postpaid card. Circle No. 346

**WHAT'S
YOUR
ENGRAVING
PROBLEM**



• Need greater speed for engraving light and medium characters . . . use Preis-Panto Model UE or UE-2.

• Does work require heavy duty machines . . . use Preis-Panto Model UE-3.

• Marking metal of extreme hardness, electrical or diamond drag . . . use Preis-Panto UE-M or UM.

• Preparing hardened steel or glass for acid etching ask for Preis-Panto Model UA-M.

Preis is the "one source" solution for your engraving problems. Complete line of accessories and attachments are available for all makes and models.



There's a Model available to solve all your particular problems economically.

TRADE MARK



Write for complete details and prices. For immediate attention write directly to manufacturer below. Ask for nearest representative.

H. P. PREIS ENGRAVING MACHINE CO.
645 U.S. Route 22 • Hillside, N. J.

Use postpaid card. Circle No. 347

ASTE EXPOSITION . . .

COMPANY

SPACE NO.

Heller Tool Co.	1020
The Herman Stone Co.	2046
Hevi Duty Electric Co.	205
Hillyer Instrument Co., Inc.	1701
Hitchcock Publishing Co.	410
Hofmann Engineering Co.	2042
Hoglund Engineering & Mfg. Co.	1301
Homestrand, Inc.	729
Hovis Screw Lock Co.	1064
Howe & Fant, Inc.	1662
Hudson Automatic Machine & Tool	1055
Humphrey Products Division	1900
Huron Machine Products, Inc.	127
C. B. Hunt & Son, Inc.	529

Ideal Industries, Inc.	1650
Illinois Institute Technology	1850

**JAM
PROOF**

**AUTOMATIC
THRUST
ADJUSTMENT**

Spring loaded spindle maintains constant tail stock thrust.

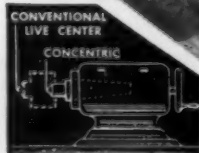
LONGER LIFE

Needle bearing distributes bearing stress over greater surface, thus holding close tolerances for much longer time.

FASTER SPEEDS

Smaller turning radius gives much higher RPM rate than ordinary live centers.

GREATER LOAD CAPACITY



the original,
patented
spring loaded live centers

**LESS OVERHANG
MEANS MORE
RIGIDITY . . .
MORE WORKING
RANGE**

Pat No. 2,520,473

Write
Today
for
Complete
Information

CONCENTRIC[®] TOOL CORP., 2486 Huntington Dr., San Marino, Calif.

Use postpaid card. Circle No. 348

MACHINE and TOOL BLUE BOOK

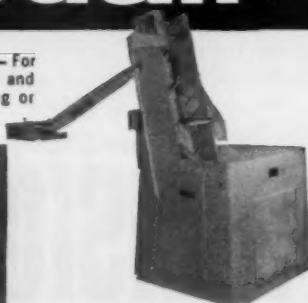
COMPANY	SPACE NO.	COMPANY	SPACE NO.
Illinois Metal Products	1168	Ingersoll-Rand Co.	1639
Illinite Div., Illinois Tool Works ..	826	Inter-Lakes Engineering	801
Index Machine Co.	524	Intern'l Research & Devel. Corp.	209
Industrial Diamond Assoc. of America	1840	The Iron Age, Automotive Industries, Chilton Co.	231
The Industrial Press	825		
Industrial Tectonics, Inc.	427		
Ingersoll Milling Machine Co. ..	621		
Cutter Division			

Now! feed parts automatically with

Feedall



ELEVATING FEEDERS — For fully automatic feed and orientation of rolling or sliding parts.



HOPPER FEEDERS — For high production with minimum handling.

BAR FEEDERS — For continuous feed 5 to 20 fpm. Completely self-contained units with variable speed.



TO CUT COSTS: ADD COMPLETE AUTOMATIC FEED ON FAST PRODUCTION MACHINES

Feedall Automatics have now been used with exceptional results to feed gear blanks, valve plugs, steel or plastic bushings, bars up to 1-1/2" x 30" long, and scores of widely varied parts. These time and cost-saving machines add storage capacity, save manpower, boost production, cut unit costs. And engineering design is outstanding.

NEW CATALOG contains all data, includes estimate sheet. Write for your copy today.

Feedall

Producers of automatic feeding devices
FEEDALL, INC. • WILLOUGHBY, OHIO

ASTE EXPOSITION . . .

COMPANY	SPACE NO.	COMPANY	SPACE NO.
Jarvis Corp.	1417	King Tester Corp.	437
Jemco Tool Corp.	1167	Albert Klingelhofer Mach.	
Jeon Manufacturing Co.	2054	Tool Corp.	1739
Jergens Tool Specialty Co.	1672	Koppy Tool & Die Co.	915
Jersey Manufacturing Co.	2154		
Jiffy Disintegrators, Inc.	2014	L	
Jiffy Manufacturing Co.	2055	Lamina Dies & Tool, Inc.	929
C. E. Johansson Gage Co.	418	Landis Machine Co.	1538
The I. O. Johansson Co.	1946	Lapeer Manufacturing Co.	833
The Johnson Gage Co.	304	Lassy Tool Co.	1159
O. S. Johnson & Co.	2053	Latrobe Steel Co.	245
Jones & Lamson Machine Co.	1504	Le Count Tool Works, Inc.	2002
Jones & Laughlin Steel Corp.	1716	Lehmann-Fulton Boring Tool Co.	137
Jones & Shipman (Canada) Ltd.	914	Leland-Gifford Co.	2105
		Link Aviation, Inc.	444
K		Littleford Bros., Inc.	2120
Kalamazoo Tank & Silo Co.	525	Livernois Engineering Co.	923
Taber Instrument Corp.	1915	Lodding, Inc.	112
Karge-Turnomat Div.		Logan Engineering Co.	625
Kennametal, Inc.	1605	Logansport Machine Co., Inc.	1652

CONTINENTAL Certified DRILLS

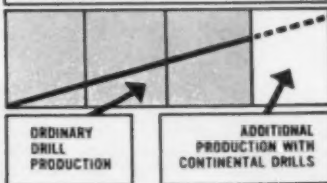


PRECISION

MORE HOLES PER DRILL

Today's drilling problems on both standard and new metals require twist drills with *something extra* built into them. That's why Continental drills are so acceptable to leading *cost conscious* production plants. Ask your industrial jobber

MAJOR PRODUCTION PLANTS PROVE CONTINENTAL DRILLS LAST LONGER!



NEW YORK
50 Church Street
CO 7 5662

WAREHOUSES:
LOS ANGELES
8551 Whittier Blvd.
RA 3-1287

TACOMA, WASH.
2006 Center Street
MA 7 3434



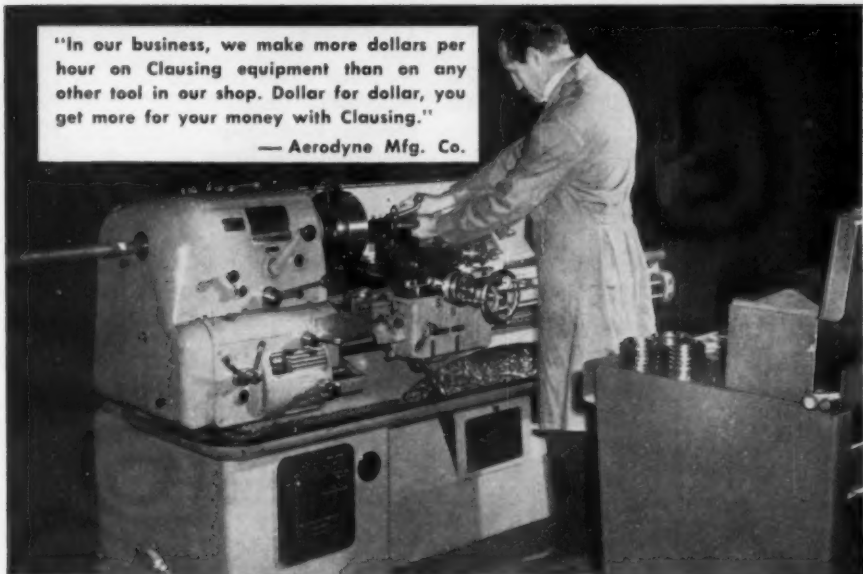
CONTINENTAL
DRILL CORPORATION
555 W. Adams St., Chicago 6, Illinois

LET
COUNT MORE HOLES
SHOW YOU HOW
TO CUT COSTS



"In our business, we make more dollars per hour on Clausing equipment than on any other tool in our shop. Dollar for dollar, you get more for your money with Clausing."

— Aerodyne Mfg. Co.



CLAUSING COLCHESTER GEARED-HEAD LATHES LEAD THEIR FIELD IN CAPACITY—PERFORMANCE—VALUE

The statement of Aerodyne Manufacturing Company, above, is typical—users everywhere report Clausing geared-head lathes lead their field in capacity, performance and value. Here's why:

They're bigger in capacity than other lathes in their class. Larger spindles, larger thru-hole capacity, larger bearings for heavier work. 17" lathe spindle, for example, has $3\frac{1}{8}$ " thru hole — 15" lathe, $2\frac{1}{8}$ " hole — 13", $1\frac{9}{16}$ " hole.

Have heavy-duty construction throughout. Bed ways are induction hardened. Gears in head and quick-change box run in bath of oil. Power feeds are taken from separate feed rod, lead screw is used for thread cutting only. Spindles are steel forgings.

Built for precision performance — to American standards of toolroom lathe accuracy. Have Gamet Micron tapered roller bearings with oil flow lubrication — the most advanced and accurate bearings known to industry.

Each is an outstanding value. 13" cabinet base models, including motor and controls, start at \$2113; 15" cabinet base at \$2988; 17" at \$4715. You owe it to yourself to investigate before investing in any lathe.

Lathe Capacities: 17" lathe: 54" and 78" centers, 28" swing in gap; 15" lathe: 30" and 48" centers, 24" swing in gap; 13" lathe: 24" and 36" centers, 18" swing in gap.

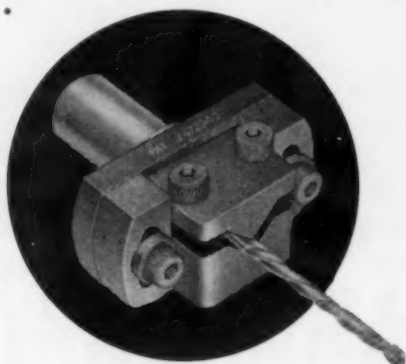
CLAUSING DIVISION

4-107 N. Pitcher St.

Write for Free Literature
ATLAS PRESS COMPANY
KALAMAZOO, MICHIGAN

Use postpaid card. Circle No. 351

COMPANY	SPACE NO.	COMPANY	SPACE NO.
Lovejoy Tool Co., Inc.	1870	Madison-Relco Tool Co.	1224
The Lufkin Rule Co.	1046	Magnaflux Corp.	102
M		Malcus Tool Corp.	2047
M-B Products, Inc.	1459	Man-au-Cycle Corp.	
Machine Tool Mfgs. Affiliates ..	1311	of America	1748
Mac-It Screw Division ..	404	Manex Machinery Corp.	733
Madison-Faessler Co.	1224	Marblette Corp.	1950
Madison Industries, Inc.	1224	Martin Engineering Co.	1361
		Maserati Corp. of America	1320



in half the time

Brookfield Tool Holders make tool set-ups easy!

Now, without bushings or collets, on the first try you can set up drills, counterbores, reamers or cutters for almost any machining operation. Precision ground V-jaw vises, Brookfield Tool Holders make even toughest set-ups a cinch. With one wrench, insert the tool, tighten the jaw, then float the tool into dead center position and tighten. It's as easy as that!

FREE! Descriptive illustrated brochure, plus price and specification lists.

BROOKFIELD, INCORPORATED

STOUGHTON 112, MASSACHUSETTS

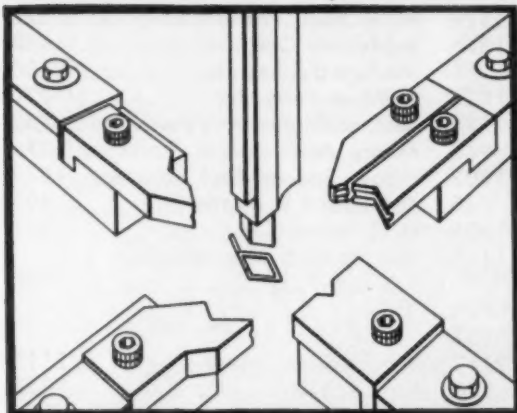
Use postpaid card. Circle No. 352

MACHINE and TOOL BLUE BOOK

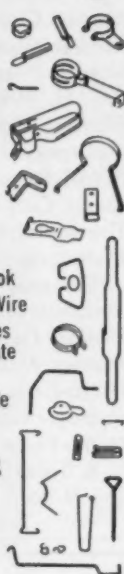
**NILSON
4-SLIDES**

FORMING PRODUCTION

PROFITS... *Automatically*



PRODUCT: Deadlock Hook
MATERIAL: Soft Basic Wire
PRODUCTION: 280 Pieces
Per Minute
MACHINE: No. S-0
Nilson 4-Slide



16,000 PARTS PER HOUR on a
NILSON
Automatic **4-SLIDE**

Whether your product is formed simply . . . or requires complex bending in several planes . . . a Nilson 4-Slide may be the solution to your production problems.

The sketch above shows the tooling used by a leading manufacturer to mass-produce metal hooks—at the rate of 280 pieces per minute! A Nilson 4-Slide has proved to be the most efficient, economical way to manufacture this product . . . and many other kinds of wire forms and small metal stampings.

Manufacturing costs must be kept down to meet today's competition. The combination of high speed and product uniformity—basic advantages of Nilson 4-Slides—means maximum production, minimum operating costs.

Before you design, tool, or specify manufacturing methods for your product, get in touch with Nilson. Over 60 years of experience with wire and metal forming applications can help you form better products . . . more profitably.



NILSON
THE A. H. NILSON MACHINE CO.

1504 Bridgeport Avenue • Shelton, Conn.

AUTOMATIC WIRE & RIBBON METAL FORMING 4-SLIDE MACHINES • WIRE & STOCK REELS • WIRE STRAIGHTENING EQUIPMENT • AUTOMATIC STAPLE FORMING MACHINES • SPECIAL WIRE FORMING EQUIPMENT

Booth 1817 ASTE Show

Use postpaid card. Circle No. 353

ASTE EXPOSITION . . .

COMPANY	SPACE NO.	COMPANY	SPACE NO.
Master Chemical Corp.	1329	Miller Fluid Power Co.	1625
Master Manufacturing Co.	1316	Modernair Corp.	1158
Master Pneumatic Tool Co.	1271	Modern Devices Co.	2108
Jas. H. Matthews & Co.	1324	Mohawk Tools, Inc.	230
Mayline Co., Inc.	1234	Monroe Engineering Products	132
McCrosky Tool Corp.	949	Moore Products Co.	1375
Mead Specialties Co.	1302	Moore Special Tool Co., Inc. ..	1249
Metal Carbides Corp.	740	The Robert E. Morris Co.	501
The Metal Removal Co.	1305	H. E. Morse Co.	111
Metallurgical Products Dept.	1435	The Match & Merryweather	
General Electric Co.		Machy. Co.	720
Metalworking Publishing Co.	135		
Metlab Co.	131		
Mettler Machine Tool, Inc.	2142		
Micro-Line, Inc.	138		
Micrometrical Mfg. Co.	223		
Micro-Poise Engineering			
& Sales	114		
The Milford Rivet & Mach. Co. ..	1671		

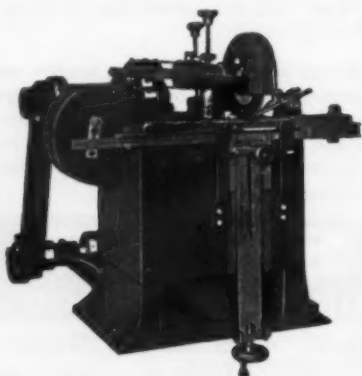
N

The National Acme Co.	2115
Karl A. Neise	1857
Nelco Tool Co., Inc.	126
New Hermes Engraving Mach. ..	964
New York Belting &	
Packing Co.	1824

Pays for Itself First Year

Savings in blade purchases alone can pay for the Wardwell EC Combination Grinder in a year. Sharpens Circular, Hack and Band Saws five or six times before discarding. The EC is a precision sharpener, the only grinder adaptable for hack, band and circular saws that does not depend on the grinding wheel to form the shape of the tooth. This unique feature enables operator to grind a variety of blades without dressing or changing wheels.

Write for Bulletin.



MAKER OF LARGEST LINE OF SAW AND TOOL SHARPENING MACHINES

Use postpaid card, Circle No. 354

COMPANY	SPACE NO.	COMPANY	SPACE NO.
Newage Industries, Inc.	2104	Nupla Manufacturing Co.	844
Nicholson File Co.	406	The Nylok Corp.	643
Nikon Incorporated	1061		O
The A. H. Nilson Machine Co.	1817	The O. K. Tool Co., Inc.	1047
The Noble & Westbrook		Oakite Products, Inc.	641
Mfg. Co.	837	Oberg Manufacturing Co.	1771
North American-Viking Drill Co.	2149	Olivetti Corp. of America	1612
Northwestern Tool &		Tinius Olsen Testing	
Engineering Co.	968	Machine Co.	1023

just ONE

DUSTKOP[®] STOPS DUST

heavy duty unit services up to 19 MACHINES

In the complete line of Aglet Dust Collectors there are sizes that will service from one to nineteen machines—large or small. Some exhaust cleaned air externally . . . others clean and recirculate air within your plant. Write for illustrated folder . . . today.



46 Standard Models—Ready to Use

AGET manufacturing company
1402 Church Street • Adrian, Michigan

ASTE EXPOSITION . . .

COMPANY	SPACE NO.	COMPANY	SPACE NO.
O'Neil-Irwin Manufacturing Co.	821	Reichhold Chemicals, Inc.	2034
Optical Gaging Products, Inc.	319	Retor Developments Limited	2018
Opto-Metric Tools, Inc.	101	Richard Brothers Punch	1548
Kurt Orban Co., Inc.	1205	J. A. Richards Co.	1834
Ortman-Miller Machine Co., Inc.	612	William Riggs Co.	2007
The Osborn Mfg. Co.	1434	Omer E. Robbins Co.	1661
O-Vee Gauge Co.	2005	Robinson Aviation, Inc.	841
Ozalid Division	2129	Ross Operating Valve Co.	814
P		The Rotor Tool Co.	1832
Pacific Industrial Mfg. Co.	1424	H. B. Rouse & Co.	1152
Geo. C. Patterson Mach. Co.	1174	Rowe Machinery & Mfg. Co., Inc.	800
Pedrick Tool & Machine Co.	809	Royal Master, Inc.	1953
Pegard (Societe Anonyme Ateliers Marcel Pegard)	1348	Royal Oak Tool & Mach. Co.	519
Penn Engineering & Mfg. Corp.	1924	Russell Holbrook & Henderson	1570
Penton Publishing Co.	1616	Joseph T. Ryerson & Son, Inc.	1036
Perry Equipment & Engineering Co.	1414	S	
Petz-Emery, Inc.	435	Sales Service Machine Tool Co.	2035
Pfauter Machine Co., Inc.	1338	Sandex Automation, Inc.	1934
PIC Design Corp.	1906	Sandvik Steel, Inc.	2118
Pines Engineering Co., Inc.	1317	Scharmann Machine Corp.	1015
Pioneer Pump Div., Def. Harvester Co.	1657	Schauer Manufacturing Corp.	1177
Portage Double Quick, Inc.	1861	George Scherr Co., Inc.	445
Porter Precision Products	1821	A. Schrader's Son Div. Scovill Mfg. Co.	1634
Portman Instrument Co., Inc.	434	Schramm, Inc.	1237
Portomag, Inc.	919	Scott Paper Co.	1935
Precise Products Corp.	1155	Screw Machine Pub. Co., Inc.	2049
Precision Detroit Co.	1248	Scully-Jones & Co.	1635
Precision Tool & Mfg. Co.	129	Sealol Corp.	130
Press Automation Systems, Inc.	1256	Seewald, Inc.	1534
Press Divisions	721	Edward Segal Machinery	539
Procurier Safety Chuck Co.	1725	Seibert & Sons, Inc.	909
Production Devices, Inc.	1363	Selas Corp. of America	1344
Production Machine Co.	1811	The Sentry Co.	436
The Producto Machine Co.	1500	Service Diamond Tool Co.	1059
Punch Products Corp.	1323	Service Machine Co.	1345
R		Serverance Tool Industries, Inc.	235
R & L Tools	830	The Sheffield Corp.	222
Rahn Granite Surface Plate Co.	403	Sheldon Machine Co., Inc.	724
		Stanley Sheppard	1740
		Sheridan Advertising Specialties	960



MANHATTAN MOLDISCS

Faster Cutting—Longer Life

Tests have proved Manhattan Moldiscs to be the most economical portable grinding wheels you can use on right angle grinders . . . even on the toughest roughing and finishing jobs. They're custom-made to meet specific job requirements for use with mild steels, stainless alloys, aluminum or copper. Every turn of a Manhattan Moldisc exposes a fresh, sharp abrasive cutting surface right down to the last usable part of the wheel . . . *without* loading or glazing. They're safer and easier to use because they're light

in weight, easy to control . . . and reinforced with special super-strength synthetic fabrics.

Manhattan Moldiscs are available in a wide range of types from harder, stiff bonds for fast roughing . . . to resilient, flexible bonds for fine finishing. Ask a Manhattan abrasive wheel engineer to show you how Manhattan Moldiscs and other Manhattan high speed, heavy duty abrasive wheels do a *better* cutting or grinding job and last *longer* . . . give you "More Use per Dollar".



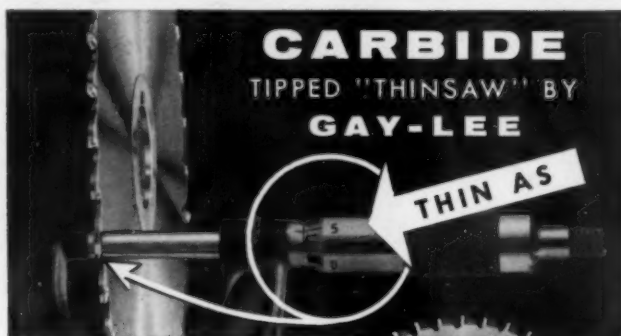
WRITE TO ABRASIVE WHEEL DEPARTMENT

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Manufacturers of Mechanical Rubber Products • Rubber Covered Equipment • Radiator Hose Fan Belts • Brake Linings & Blocks • Clutch Facings • Packings • Asbestos Textiles Engineered Plastic, and Sintered Metal Products • Abrasive & Diamond Wheels • Bowling Balls

COMPANY	SPACE NO.	COMPANY	SPACE NO.
Sierra Machine Co.	2100	Spiral Step Tool Co.	1475
Siewek Tool Co.	408	Spitfire Tool Co.	1638
Simonds Saw & Steel Co. & Simonds Abrasive Co.	312	Henry A. Spittler, Inc.	1904
Size Control Co., Div. American Gage & Machine Co.	405	The Standard Electrical Tool Co.	946
The Skinner Chuck Co.	1448	Standard Parts Co.	1173
Allen J. Smith & Associates	133	Standard Pressed Steel Co.	322
Socony Mobil Oil Co., Inc.	1339	Starlite Industries, Inc.	1069
		The L. S. Starrett Co.	1401



Ideal for precision, high-productionsawing, slitting, slotting! Exclusive Gay-Lee design features long-wearing carbide tips brazed into a circular seat which provides more brazing area, greater mechanical strength and maximum tip security. (Patented, U. S. Pat. No. 2675603, manufactured under license.)



- Thicknesses low as .030" • Thickness tolerance can be held to .0001"
- Wafer-thin for the most delicate work
- Maintain positive alignment and rigidity
- Cut to full depth without runout • Available in any carbide grade
- O. D. from 1½" to 10" • Made to any tooth form

CARBIDE SAW SPECIALISTS



Write for free literature, send us details of your problem, or bring your problem to Gay-Lee Booth No. 1919, A.S.T.E. Exposition, Philadelphia. May 1-8, 1958.

Use postpaid card. Circle No. 357

The Measure of Quality

ACRA-MENT INDICATING GAGES

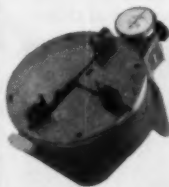


COMBINATION I.D. - O.D. GAGES

IE-500 Six models with ranges 8" to 42". I.D. or O.D. in increments of 6". Larger sizes to order. Two inch adjustable gaging depth. Indicators available to .0001". Companion Set Masters available in all ranges.

BENCH COMPARATORS

BC-700 A combination I.D. - O.D. gage with fine setting adjustment and variable contact pressure. Ranges: internal $\frac{1}{8}$ " - 7"; external $\frac{1}{8}$ " - 7". Jaws adjustable to $\frac{1}{8}$ " for contact height. Other models available.



Acra-Ment Dial Indicating Gages make it possible for you to obtain precision gaging instruments at an economical price. Acra-Ment . . . means high fidelity!



Send for your copy of the latest catalogue

ACRA-MENT
INSTRUMENT DIVISION

SEALOL CORP
211 POST ROAD
PROVIDENCE 5, R. I.

SNAP GAGES

SG-100 An adjustable, all-purpose snap gage with fine adjustment. Range $\frac{1}{8}$ " - 14" in 9 frame sizes. Carbide anvils, adjustable backstop. Base (not illustrated) converts unit to bench comparator. Other models available.



BENCH COMPARATORS

BC-300 An inclinable (25°) thickness and depth gage with great versatility. Fine setting adjustment, replaceable reference anvil - stable and accurate.



THOUSANDS of SUPEREAM STUB and CHUCKING REAMERS by the THOUSANDTHS

in our stock bins, ready
for immediate shipment

All flutes ground
after heat treat-
ment to eliminate
freezing of chips.



All Decimal Reamer di-
ameters are held to plus
.0002 and minus .000
for close sizing. Chuck-
ing reamers available in
4 sets.

THE PRECISE SIZE FOR THE JOB!

No need to order spe-
cial and wait? NOW
— right from stock ready
for immediate delivery
... Decimal Chucking
or Stub Reamers. Fast-
cutting, long-lasting 18-
4-1 high speed steel.
Made for your produc-
tion economy ... and
SMOOTH REAMING.

We take pride in the
fact that we perpetually
maintain — IN STOCK —
the largest decimal range
of reamers available
from any single source
in the world!

Our engineering service
is always at your dis-
posal.



FREE! Just off the press! Com-
plete Reamer Catalog
WRITE FOR IT. with the World's Great-
est Reamer selection by
the thousand's.

Territories Available for Rep's.



**TWENTIETH CENTURY
MANUFACTURING CO.**

ROUTE 176 and BRADLEY ROAD
BOX 429H LIBERTYVILLE, ILL.

In Emergency ...
Phone
Libertyville 2-4200

Use postpaid card. Circle No. 359

ASTE EXPOSITION . . .

COMPANY

SPACE NO.

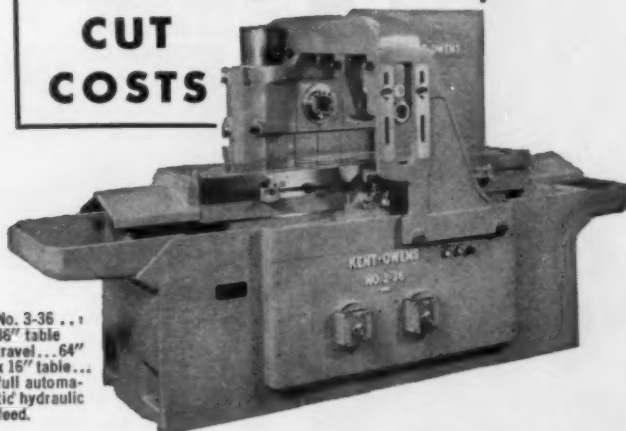
The Steco Corp.	2138
Stewart-Warner Corp.	544
Edwin B. Stimpson Co., Inc.	303
Stone Machinery Co., Inc.	545
Stupakoff Div. of The Carborundum Co.	709
Suburban Machine Co.	917
Sun Oil Co.	640
Sunnen Products Co.	1438
Super-Cut, Inc.	1849
Superior Hone Corp.	1670
Superior Pneumatic & Mfg. Co.	1929
Superior Steel Products Corp. ..	505
Supreme Products Corp.	734
Swanson-Erie Corp.	1575
Swedish Crucible Steel Co.	1068
Sykes Tool Corp., Ltd.	741
Syntron Co.	2147

T

The Taft-Peirce Mfg. Co.	219
Tapmatic Corp.	969
Taylor Dynamometer & Machine Co.	430
Techni-Tool Products, Inc.	1955
Techno Products Corp.	2136
The Texas Co.	2019
Thomas Publishing Co.	1260
Thor Power Tool Co.	1845
Thread-All Sales Co.	1060
Tocco Div., The Ohio Crankshaft Co.	1304
Tomco, Inc.	744
The Tomkins-Johnson Co.	1423
The Tool Engineer	2151
Torit Manufacturing Co.	1349
Tork-Mor, Inc.	355
The Torrington Co.	1216
Transmares Corporation	617
True-Trace Sales Corp.	2135
Tubular Micrometer Co.	445
Tubular Rivet & Stud Co.	1717
Twentieth Century Mfg. Co.	2114

COMPANY	SPACE NO.	COMPANY	SPACE NO.
U			
Uddeholm Co. of America, Inc.	330	Universal Mfg. Co., Inc.	1905
Union Manufacturing Co.	422	Upton Bradeen & James, Ltd.	1534
U.S. Burke Mach. Tool Div.	1261	V	
U. S. Tool Co., Inc.	1554	Vail Engineering Co.	508
United States Gypsum Co.	2015	Valenite Metals Div.,	
United States Rubber,		Valeron Corp.	644
Mechanical Goods Div.	1233	Valvair Corp., Sinclair Collins	
United Tool Co.	1220	Valve Co.	540
		Vanadium-Alloys Steel Co.	533

Mill Faster CUT COSTS



No. 3-36 . . .
36" table
travel . . . 64"
x 16" table . . .
full automa-
tic hydraulic
feed.

Operators like 'em . . . because Kent-Owens Machines are extremely simple and practical. Turn out milling jobs *fast*, with minimum worker fatigue! Twin-post head mounting assures balanced load. Only two gear contacts, motor to cutter, for greater cutting efficiency. Write for bulletins on wide range of single and double spindle hydraulic and hand-operated machines. Also, let Kent-Owens design and build your tooling and special machines. Kent-Owens Machine Co., Toledo, Ohio.

Call on **KENT-OWENS**
for **MILLING MACHINES**

Use postpaid card. Circle No. 360

ECONOMY

Your Standard for
**PERFORMANCE—
PRECISION—
FIT!**



Complete stocks assure prompt delivery. Outworn plugs and ring gages salvaged at low cost.

Economy
TOOL & MACHINE CO.

1829 South 68th Street
Milwaukee 14, Wisconsin

ASTE EXPOSITION . . .

COMPANY

SPACE NO.

Vanguard Engineering Co.	1063
The Van Keuren Co.	419
Vascoloy-Ramet Corp.	1035
Veet Industries	1262
Vernon Devices	1909
Victor Adding Machine Co.	732
Vlier Engineering, Inc.	957
The Vulcan Tool Co.	1404

W

E. H. Wachs Co.	1210
Wadell Equipment Co.	1816
Wales-Strippit Co.	1622
O. S. Walker Co., Inc.	1947
Warner & Swasey Research Corp.	1756
Modern Industrial Press	936
Watson Publications, Inc.	
Watts Regulator Co.	967
Webber Gage Co.	302
Weisser Machinery Corp.	1028
Wells Manufacturing Corp.	1713
Wesson Co.	1516
West Point Manufacturing Co.	1757
Westwood Machine Tools, Can. Ltd.	1948
S. B. Whistler & Sons, Inc.	1525
The Whiton Machine Co.	1163
The Wickman Manufacturing Co.	1405
J. H. Williams Co.	2009
Wilson-Carr, Inc.	1908
Wilson Mechanical Instrument Div. (American Chain & Cable Co., Inc.)	309
Wintriss, Inc.	1921
Wisconsin Drill Head Co.	1760
N. A. Woodworth Co.	412

Z

Zagar, Inc.	1738
Carl Zeiss	438

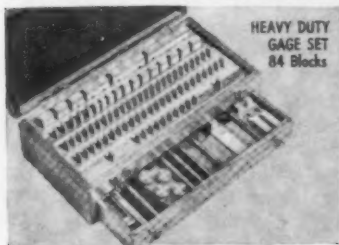
Webber Gage Blocks

Insure the Accuracy Essential To Mass Precision Production

Making Webber Gage Blocks is a science—a combination of human skill and the world's finest mechanical and laboratory equipment, both highly specialized. Only with such a combination can gage blocks be made to meet the high standards which Webber steadfastly maintains. Webber can fill your every gage block need, with the most complete line of gage blocks and related accessories.



SQUARE
Gage Blocks
In Standard Steel and
CROBLOX (solid chrome carbide)
In 88, 85, 84, 81, 36, and 34 Block Sets
Accuracies, both steel and Croblox,
"B" + .000006 "A" + .000004
— .000002 — .000002
Illustrated — Set No. 88A with Accessories



HEAVY DUTY
GAGE SET
84 Blocks

WEBBER ACCESSORIES—permit using gage blocks directly as snap or ring gages, scribers, and with a base block, as a height gage.



WEBBER TEMP-CHECK
Essential wherever accurate control of temperatures is a must. Measures liquids, gases or solids. 4 Models.



THE NEW
WEBBER
OPTICAL
HEIGHT GAGE

Micro Accurate
Vertical Measurements up to
61 inches.



STANDARD
STEEL BLOCKS
84-43-38
Block Sets

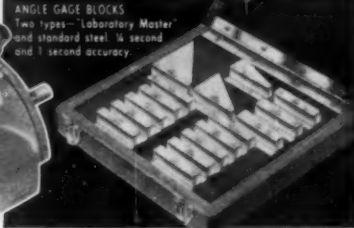


"THIN BLOCK"
Gage Set
30 Blocks



"CROBLOX"
GAGE SETS

Solid
Chrome Carbide
82, 33, 36 and
14 Block Sets



ANGLE GAGE BLOCKS
Two types—"Laboratory Master"
and standard steel. 1/4 second
and 1 second accuracy.

Webber
GAGE COMPANY

12905 Triskett Rd. • Cleveland 11, Ohio

LARGEST EXCLUSIVE MANUFACTURER OF PRECISION GAGE BLOCKS



for LOW-COST, HIGH-SPEED PRODUCTION Turning

SHELDON *Precision* **TURRET LATHES**

An extremely versatile, capable and fast, production tool for turning precision parts. Increases pieces per hour, lowers cost per piece. Lower tool investment, saves floor space, reduces power costs. Easily operated by anyone. Rapidly pays for itself in added profit. The extra capacity makes the lathe ideally suited for either high speed precision collet work or as a chucker.

This tool can be your answer to today's competition.

10", 11" and 13" Sheldon Lathes • Sheldon Variable-Speed Lathes • 13" and 15" Sebastian Geared Head Lathes • Sheldon Milling Machines • Sheldon Shapers.

Write for Turret Lathe Circular and General Catalog

★ Push Button speed selection

★ Heavy duty power driven variable speed drive

★ Handwheel 6-station, $6\frac{1}{2}$ " stroke bed turret

★ Lever-operated cross slide with front and rear tool blocks

★ Lever-operated $1\frac{1}{16}$ " draw bar collet attachment ($1\frac{3}{8}$ " hole through spindle)

★ Zero-Precision taper roller spindle bearings

★ $13\frac{1}{4}$ " swing over bed ways

★ 2-HP Motor

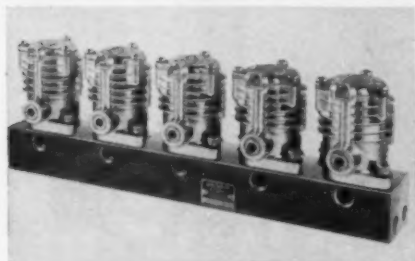
★ Complete Line of accessories and attachments

See us at
our BOOTH No. 724
ASTE SHOW

SHELDON MACHINE CO., Inc. 4242 N. Knox Ave.
Chicago 41, Illinois

The products described below have been selected from the thousands being displayed at ASTE's Philadelphia Tool Show. Many are being unveiled at the Show; others were introduced in recent months and are being exhibited publicly for the first time. Read about them here, then look for them at the Show.

Air Line Parts

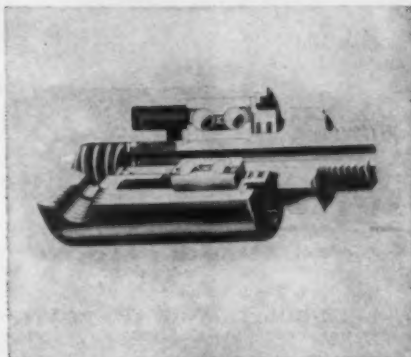


COMPACT MULTIPLE STATION MANIFOLDS are designed to provide efficient, low-cost mounting of Valvair solenoid pilot valves by eliminating the need for separate sub-bases. Use of the manifold is reputed to provide centralized valve panel installations, improving the appearance of complex piping because of equally spaced cylinder connections. Pilot manifolds, of aluminum alloy bar stock, are offered in two, three, four, and five station types. Common inlet, exhaust, and individual cylinder ports are tapped $\frac{1}{4}$ " NPT. Conduit outlets are $\frac{1}{2}$ " NPT. Valvair/Sinclair-Collins Valve Co., Akron, Ohio. Space No. 540.

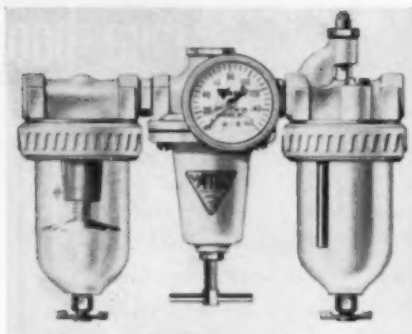
Use postpaid card. Circle No. 601

STANDARD B2 AND C2 ROTOR-SEALS, featuring factory-lubricated and sealed ball bearings which never require additional lubrication. The rotorseals are compact devices for transmitting air, liquids, or gases from stationary sources into rotating shafts. They are applicable to all types of single-passage applications at pressures to 150 psi. The B2 model operates at speeds to 4000 rpm, the C2 to 3000 rpm. Fawick Airflex Div., The Fawick Corp., Cleveland, Ohio. Space No. 513.

Use postpaid card. Circle No. 602

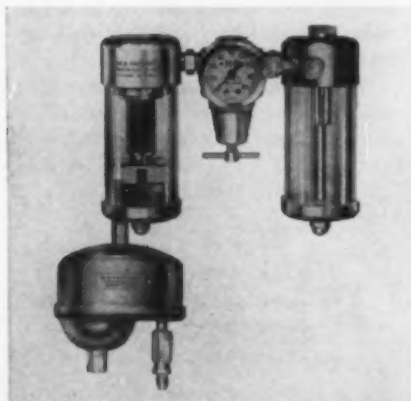


ASTE EXPOSITION . . .



AIR LINE LUBRICATORS (pictured at right of filter-regulator-lubricator unit) has external adjustment screw for accurate control of oil feed rate from a few drops per minute to a steady flow. Entire area of metered oil droplets, visible through sight glass, and exposed to high velocity air jet, provides complete and uniform vaporization. The small venturi section provides efficient lubrication at low air flow rates even less than 1 cfm. **Watts Regulator Co., Lawrence, Mass. Space No. 967.**

Use postpaid card. Circle No. 603



W-4 COMBINATION OF AUTOMATIC AIR LINE FILTER, air pressure regu-

lator, automatic air line lubricator, and automatic air trap offers protection of air valves, cylinders, controls, pneumatic tools, etc. Transparent plastic enables viewing of filtering element and foreign matter in the filter. Sight drop feed indicator tube of the lubricator makes method of metering oil from bowl into airline positive and definite. The air trap is said to assure dry air in pneumatic systems at all times. **M-B Products, Inc., Detroit, Mich. Space No. 1459.**

Use postpaid card. Circle No. 604

Arbors



PETERSON FLUSH ARBOR permits a side-milling cutter to do the work of a large shell end mill, according to the announcement. With a side-milling cutter, it does many shaper jobs speedily and to close tolerances. Important features are the half-split expanding tapered bushing and the flush tightening screw. Each arbor includes above tapered bushings, spacers and keys for cutters $\frac{1}{4}$ " to $\frac{3}{4}$ " wide with 1" and $1\frac{1}{4}$ " holes. **Sierra Machine Co., Berkeley, Calif. Space No. 2100.**

Use postpaid card. Circle No. 625

NEW!

LARGER CAPACITY (6" WHEEL) PROFILE GRINDER

by Boyar-Schultz

For Heavier and Larger Work

Long known as a time saver in Tool & Die Shops, Boyar-Schultz No. 2 Profile Grinder is now available in a new larger capacity size.

With its 6-inch diameter wheel capacity this new Profile Grinder will finish large dies and other similar contour grinding with the rapid efficiency so well known in the smaller wheel capacity models.

The new size is made in the Single Spindle model, with a bigger table to accommodate larger and heavier work. Also available with Standard Upper Spindle.



With Dual Spindle



With Dust Collector



BOOTH NO. 1539

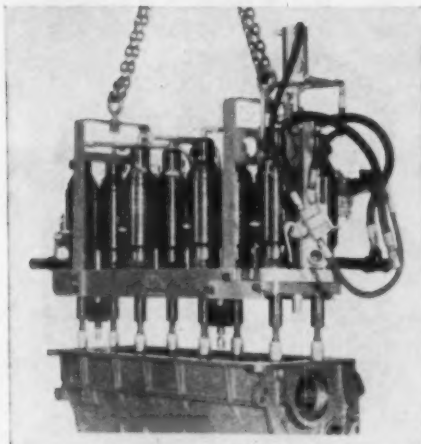


BOYAR-SCHULTZ
CORPORATION

2008 South 25th Avenue, Dept. A-K • Broadview, Illinois

ASTE EXPOSITION . . .

Assembly Machines



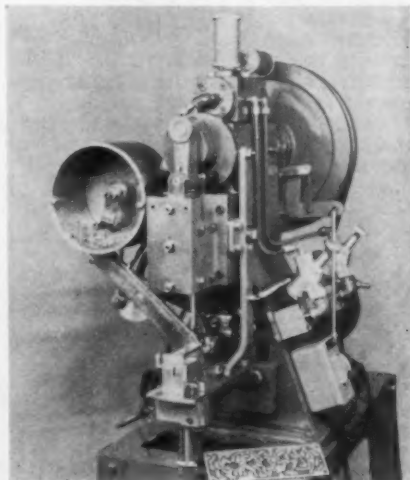
MULTIPLE-SPINDLE NUTSETTER

with a special supplementary indexing feature is a recent addition to a family of custom-designed, pneumatically powered multiple-spindle assembly machines. The 8-430-NS, an eight-spindle unit designed for a heavy equipment manufacturer, runs ten main-bearing cap bolts in a diesel truck engine. Suspended vertically from a balancer, the machine is guided to the work by two dead handles. When the driving sockets are located on the bolts a thumb-operated valve is depressed to start the motors, which then drive eight of the ten bolts to stall torque simultaneously. Two pairs of bolts on the rear main bearing cap are spaced too closely to be run simultaneously with the others by nutsetting motors of the size necessary to enable torque requirements to be met. The supplementary index feature (at right end of machine) is utilized to accomplish this. Cleco Division, Reed Roller Bit Co., Houston, Texas. Space No. 1871.

Use postpaid card. Circle No. 605

THOR-DRAULIC MULTIPLE NUT-SETTER, equipped with completely hydraulic torque control system, will be introduced at the Tool Show. Powered by a unit which may be positioned up to 30 feet away, and designed with two-stage hydraulic driving, the system to be shown delivers uniform torque to plus or minus one foot pound simultaneously to three nuts. It can be designed to provide the same torque uniformity to as many as 20 threaded fasteners and also can be adapted to control the driving of other multiple power tools than nutsetters. Thor Power Tool Co., Chicago, Ill. Space No. 1845.

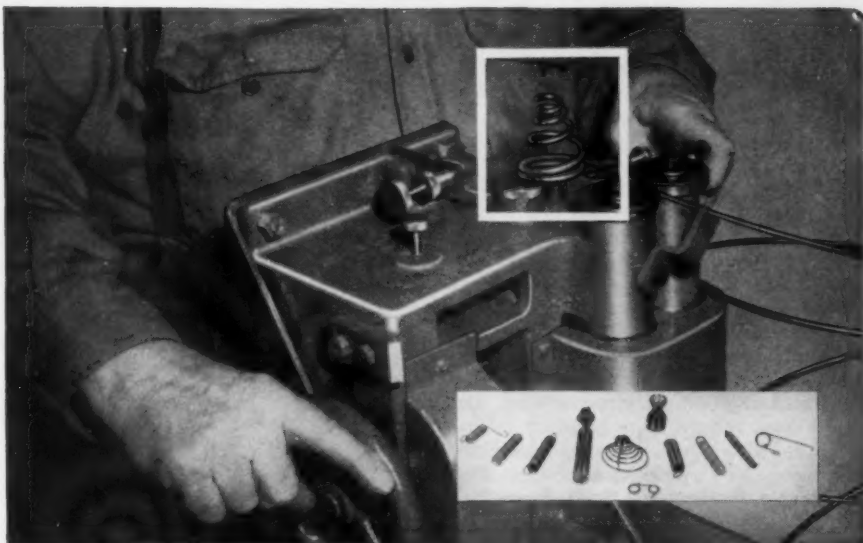
Use postpaid card. Circle No. 606



MODEL NRTP TUBE PIN AND TURRET TERMINAL SETTING MACHINE

is designed to automatically feed and stake tube pins and turret terminals of types most generally used. Tube pins or terminals are hopper fed to a transfer mechanism where each piece is individually engaged in a holding mechanism. Production in excess of 40 per minute is said to be easily maintained. Edward Segal Machinery, N.Y., N.Y. Space No. 539.

Use postpaid card. Circle No. 607



Any spring made fast in your shop!

WITHOUT USE OF ARBORS

For a replacement or experimental spring, any shape, diameter or pitch from flat or round wire sizes .005" to .125", you can produce it in a matter of seconds with Perkins Precision Spring Coiler. You eliminate arbors, yet turn out precision springs — torsion, compression, extension, tapered, or special springs, coiled either left or right hand, in any desired length, any diameter from 3/32" to 12" and larger, with or without initial tension, and with

open or closed ends. Eliminate expensive special orders and costly production delays! Make your own springs to exact specifications as replacements or experimental work. Make them fast, right in your own shop!



PERKINS

MACHINE AND GEAR CO.

Special Machinery Division,
West Springfield, Mass.



Starret adjustable jaw cut nippers (left) and Gardener Hook-Kon spring looping tool (center) — handy, precision, time-saving accessories for spring coiling. Perkins Spring Coiler available as bench model or power model shown here, (right) for tool shop or continuous runs.

Perkins Machine and Gear Co.
Special Machinery Division, Dept. A2
W. Springfield, Mass.
Please send information and prices on
Perkins Spring Coiler.

Hand Model ☐ Power Model ☐

Name.....Title.....

Company.....

Address.....

City.....State.....

Use postpaid card. Circle No. 365

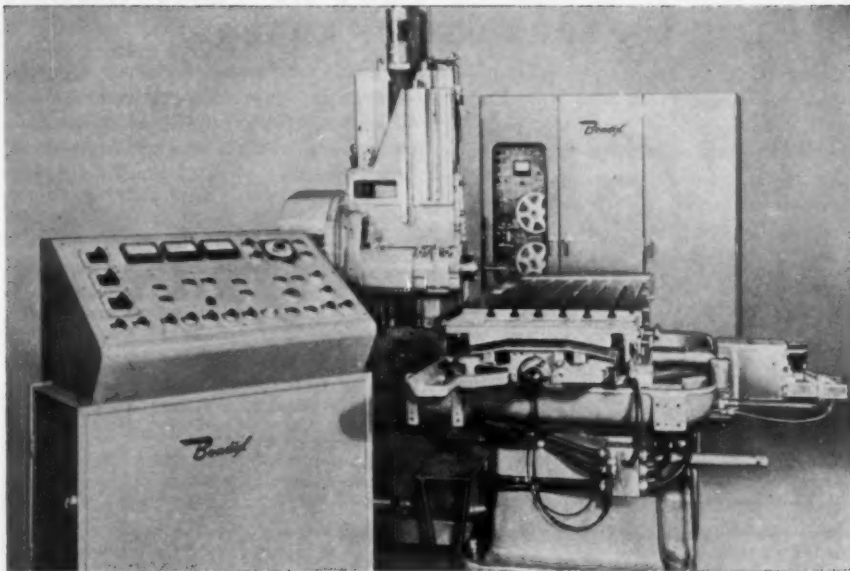
ASTE EXPOSITION . . .

AUTOMATIC SOCKET SCREW FEEDER-DRIVER adds standard socket set screws to the list of threaded fasteners which can be incorporated into automated assembly operations. The machine, in bench or pedestal mounting, combines a new mechanical orientation device with a conventional power screwdriver and a rotary hopper feed system to produce 100% screw feed and an average increase of 300-400% over manual insertion. With a potential rate of 1200-1400 production units per hour, it will feed and drive to a predetermined depth or torque setting. On operations requiring only loose insertion of the screw, the machine can complete 1800 units per hour. **The Bristol Co., Waterbury, Conn. Space No. 1447.**

Use postpaid card. Circle No. 608



Automatic Machine Control



TAPE CONTROL SYSTEM includes a tape preparation unit and a machine control unit that operates a machine

tool. System controls the production of machined parts from design drawing information without the use of tem-

SPROCKETS and CHAIN

in the full range required
for drives from $\frac{1}{4}$ " to 2" Pitch

FROM STOCK!

NOW — you can meet any drive need — light to heavy duty — with standardized roller, block, or ladder chain and sprockets OFF-THE-SHELF from your BOSTON GEAR DISTRIBUTOR — AT FACTORY PRICES.

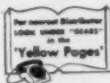


NEW CATALOG SC-3

lists all new types and sizes, and all other Sprockets and Chain in the big BOSTON Gear line. Includes helpful engineering data to simplify sprocket selection. For your copy, call your BOSTON Gear Distributor, or write Boston Gear Works, 81 Hayward St., Quincy 71, Massachusetts.

CALL
YOUR

BOSTON Gear
DISTRIBUTOR



7124 "OFF-THE-SHELF" TRANSMISSION PRODUCTS FROM STOCK — AT FACTORY PRICES — ASK FOR CATALOG
Stock Gears • Sprockets and Chain • Speed Reducers • Bearings • Pillow Blocks • Couplings

Use postpaid card. Circle No. 366

ASTE EXPOSITION . . .

plates, cams or models. It will be operating a three-axis milling machine at the Show. The tape preparation unit consists of a commonly used Flex-O-Writer, a computer, an auxiliary magnetic tape storage unit and a control tape punch. The machine control unit consists of a hydraulic power supply, electronic machine control unit, servo drives and feedback units. Excellent surface finishes are achieved with this system, which moves the cutting tool in a calculated, smooth, continuous path at all times. Automatic pocket and profile milling is provided by only a description of the final part dimension, number of rough passes, and depth of finish cut. **Bendix Aviation Corp., Detroit, Mich. Space No. 936.**

Use postpaid card. Circle No. 609

Bags, shipping

PADDED SHIPPING BAGS are now emphasizing features as heavy duty with reinforced outer liners, and grease-proof and rust-inhibiting inner liners. Also to be shown will be the Jiffy macerated paper pads and Kusion Kraft for interior packaging of tools. **Jiffy Manufacturing Co., Hillside, N.J. Space No. 2055.**

Use postpaid card. Circle No. 610

Balancing Equipment

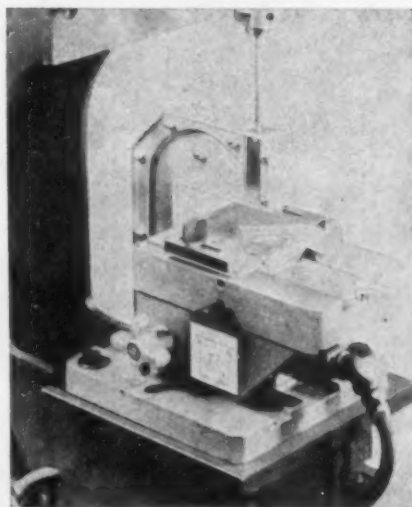


RAVE OLSEN STATIC-DYNAMIC BALANCING MACHINE is capable of

balancing individual parts with a minimum of setup time, as well as balancing the same part on a production basis. The machine is easily changed over from one part to another. The amount of unbalance may be read directly in ounces or any other pre-selected unit. The machine has a seismic mounted vibration pickup unit. The machine can come with special drive to obtain speeds up to 36,000 rpm, when so ordered. **Tinius Olsen Testing Machine Co., Willow Grove, Pa. Space No. 1023.**

Use postpaid card. Circle No. 611

Ballizing Equipment



BALL-O-MATIC FIXTURE, for ballizing a variety of part diameters, sizes, and shapes are to be shown. It utilizes a track with a single ball air-return action and can be adapted to an arbor press, drill press, vertical broach, etc. The fixture can be shown as complete unit or individually. Two-part assembly accommodates parts with ID up to $\frac{1}{4}$ ". **Industrial Tectonics, Inc., Ann Arbor, Mich. Space No. 427.**

Use postpaid card. Circle No. 612

A NEW LINE OF **DAKE** *air hydraulic* **PRESSES**



FOUR NEW MODELS

25 TONS provides easy operation, low cost, and speed for general pressing and production work.

50 TONS for assembling, straightening, bending in minimum time.

75 TONS for handling heavy-duty press jobs quickly and easily. Ideal for machine shops, tool and die shops.

150 TONS for extra-heavy press work in heavy industry. This press is recommended for construction work, fabrication, and repair work requiring extra-heavy pressures.

CHECK THESE IMPORTANT **DAKE** FEATURES

- ✓ **Rapid Ram Approach**—automatically changes to power stroke when it contacts the work.
- ✓ **Movable Workhead**—self-contained, easy to center over work. Workhead can be purchased separately.
- ✓ **Modern Design**—all of the operating controls are at convenient working height.
- ✓ **Extra Long Stroke**—handles long pressing jobs more easily.

DAKE CORPORATION, 608 Robbins Road, Grand Haven, Michigan

**DAKE
PRESSES**



Arbor Presses



Hand-Operated Hydraulic



Power-Operated Hydraulic



Guided Piston



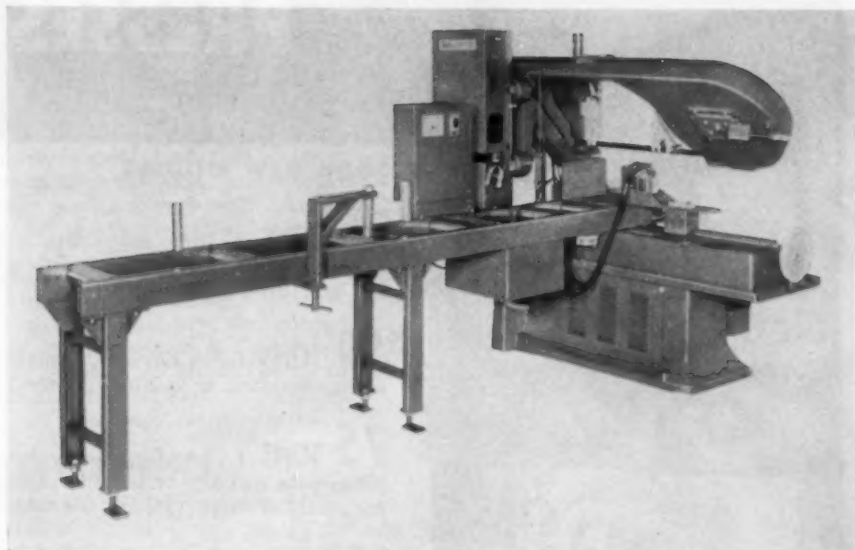
Cap Type Presses



Movable Frame

Use postpaid card. Circle No. 367

Bar Feeds



MODEL 312 WELLS ROTO-VEYOR AUTOMATIC BAR FEED converts Wells Model 1200 band saws into heavy duty automatic cut-off machines. The feed mechanism and stock clamping action of the bar feed is synchronized with the saw to provide accurate repetitive cutting. All conveyor feed rollers are carried on special bearings, under full power through chain drive and speed reducer by three phase, ball bearing motor. It has a positive stock stop, with safety switch—saw will not continue cutting cycle until switch is tripped by fully projected stock. There is unlimited projection length also. **Wells Manufacturing Corp., Three Rivers, Mich. Space No. 1713.**

Use postpaid card. Circle No. 613

Bar Machines

M-100 AUTOMATIC, M-100 Manual, M-75 Automatic and M-35A for both

ferrous and non-ferrous cutting will be on display. The fully automatic machines will feature the bar feed, pneumatic control with oil check, new patented wheel wear compensator and positive acting air vise. **Stone Machinery Co., Manlius, N.Y. Space No. 545.**

Use postpaid card. Circle No. 614

Barrel Finishing Equipment

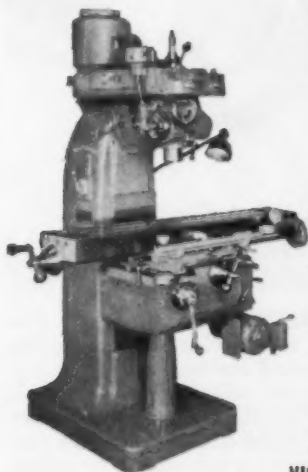
BARREL FINISHING MACHINE for small and medium lots of parts, the new DBO-2A, has a built-in screening drawer separating system for speedily segregating media from the work load. This makes parts immediately available for assembly and of course eliminates the need for accessory media separating equipment. Variable barrel speeds from 8 to 38 rpm. Double compartment neoprene lined barrel allows simultaneous processing of different work parts re-

Produce **MORE...**

Produce it **BETTER!**

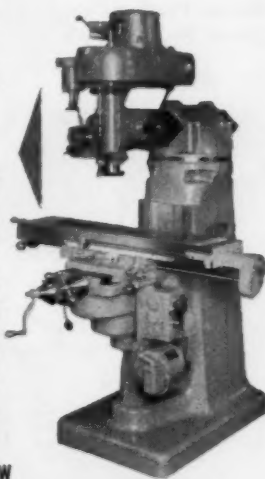
ON THESE IMPROVED ECONOMICAL INDEX VERTICAL MILLS

Super
"55" MILL



1½ HP Head or optional 2 HP with continuous duty motor gives 50% or more capacity . . . More rigidity, more accuracy . . . Increased horse power and dynamically balanced Cast Iron Pulleys and Drive System afford improved production capacity . . . More weight in the column, heavier ribbed column, heavier knee, heavier saddle.

"45" MILL



Unique square design of overarm affords more rigidity, greater accuracy . . . Provides extra range and capacity . . . More power at the cutter. No adjustment required on overarm and head after use . . . No need to re-indicate head after moving overarm . . . Speed range with nine changes makes possible the use of high speed or carbide tipped cutters to best advantage.

VISIT OUR BOOTH 524, A.S.T.E. SHOW

INDEX MACHINE CO.

540 N. MECHANIC STREET JACKSON, MICHIGAN



quiring various compounds and media as well as time cycles. The barrel will handle a total work load up to 700 lb. Capacity is 5.6 cubic feet. Almco Div., Queen Products Inc., Albert Lea, Minn. Space No. 2101.

Use postpaid card. Circle No. 615

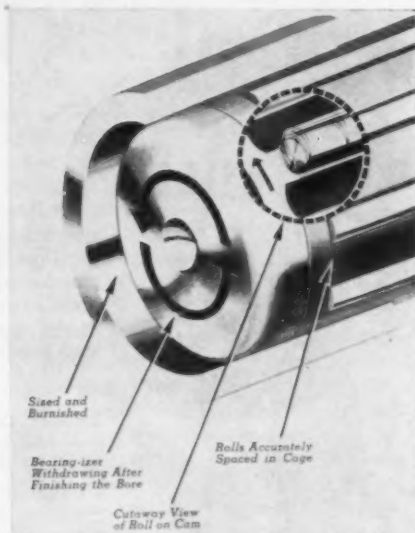


SMALL SHOPS will be especially interested in the twin barrel SuperSheen Model DBO-1A. Each barrel has a capacity of one cubic foot. This unit is

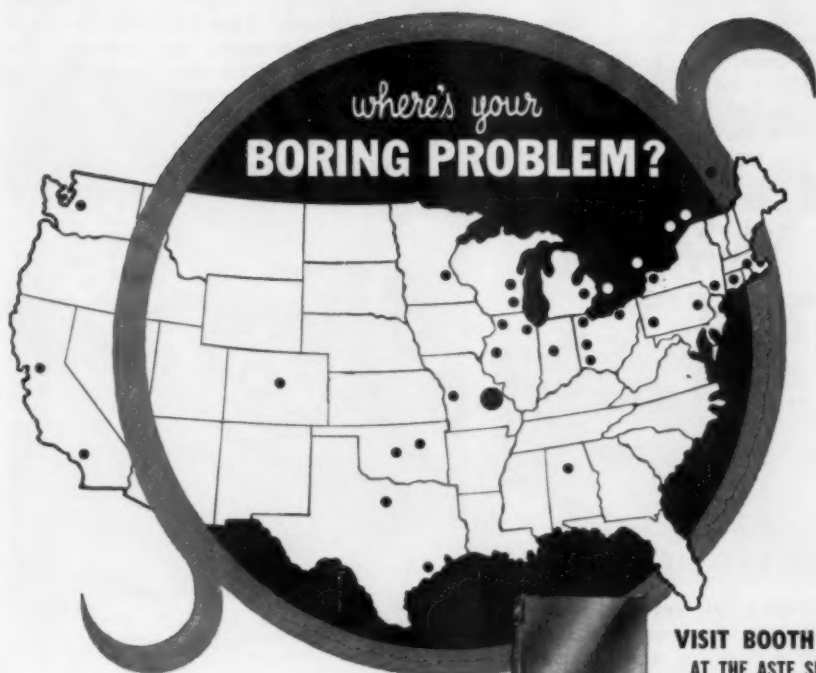
also widely used for processing large lots of small parts for sample processing and for barrel finishing research work. Variable speeds from 10 to 50 rpm; double load-unload-separating drawers. Almco Div., Queen Products Inc., Albert Lea, Minn. Space No. 2101.

Use postpaid card. Circle No. 616

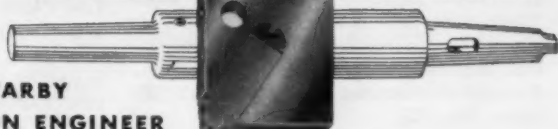
Bearingizing Tools



BEARINGIZING TOOL surface finishes and sizes holes, concentric flat surfaces, round shafts, stems, hubs and other contours. Adaptable to all metals of suitable ductility, the tool produces a series of rapid-fire blows at the rate of 200,000 or more per minute by means of high-speed, cam-actuated peening rolls. The hammer-like blows of these highly finished, super-accurate rolls displace and condense the material worked on and produce an ultra-surface that is claimed to be obtainable from no other finishing method. The amount of



**VISIT BOOTH 137
AT THE ASTE SHOW**



**THERE'S A NEARBY
LEHMANN-FULTON ENGINEER
TO GIVE YOU FREE TECHNICAL HELP**

BLOCKS,
BARS AND CUTTERS—
STANDARD AND CUSTOM
MADE—IN ALL TYPES
AND SIZES

Our factory-trained engineers are all over the map. Any of them will help solve your tooling problem . . . by mail, phone or in person.

Have them show you how Lehmann-Fulton hardened block type boring tools cut costs and increase production in **ALL** your boring operations.

Write today for the name and address of our nearest representative. We'll also send you our free Catalog BT57 full of valuable technical data. No obligation, of course.



LEHMANN BORING TOOL

DIVISION OF FULTON IRON WORKS COMPANY
4235 DUNCAN AVE., ST. LOUIS 10, MO.

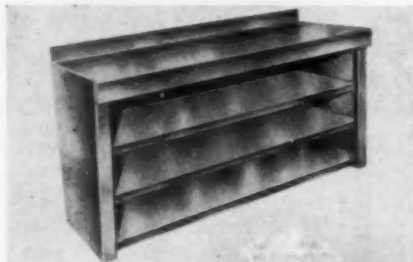
Use postpaid card. Circle No. 369

ASTE EXPOSITION . . .

displacement is limited by the ability of the material to "grain flow" under the bombardment of the 200,000 blows a minute, and varies from a few tenths to a few thousandths of an inch. Bearingizing tools are designed for the particular part on which ultra-surface is to be produced. Cogsdill Tool Products, Inc., Oak Park, Mich. Space No. 1243.

Use postpaid card. Circle No. 617

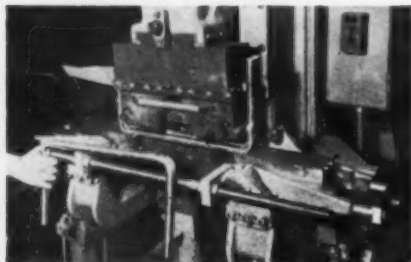
Benches, work



A SERIES OF 104 CABINET WORK BENCHES features closed ends and backs with doors, drawers, and shelves as desired. Benches are available with 12 ga. steel, masonite on steel, maple, or plastic bonded tops. Four, five, and six foot lengths are available. Equipto Div., Aurora Equipment Co., Aurora, Ill. Space No. 975.

Use postpaid card. Circle No. 618

Bending Machines

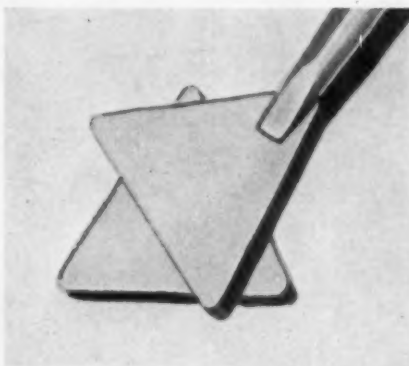


MODEL 6-T TUBE BENDING PRESS makes two bends in each of two tubes

(four bends per stroke), with production reported as high as 3000 bends per hour. Adjustments are provided for quick set-up of all dies. The illustration shows a setup for making 90° "crush" bends, in which the tubing is allowed to "suck in" on the inside as well as outside of the bend. Pines Engineering Co., Inc., Aurora, Ill. Space No. 1317.

Use postpaid card. Circle No. 619

Bits, tool



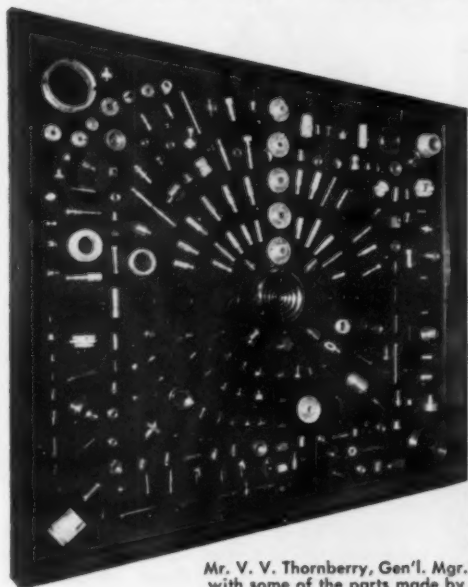
LAPPING PROCESS is said to assure a perfectly flat, smooth finish on Besly toss-away carbide inserts. It provides a highly polished surface, so fine that two carbide inserts easily wring together (see illustration). This feature gives inserts greater cutting tool life per cutting edge with less chipping and breakage. Besly-Welles Corp., South Beloit, Ill. Space No. 632.

Use postpaid card. Circle No. 620

THROWAWAY INSERTS packaged for production efficiency in heavy 30-gauge acetate. Individually formed clear plastic pockets fit the manufacturer's wide range of square, triangular, and round throwaway inserts, provide easy check of insert stock. One-at-a-time dispensing by easy open slide. Adamas Carbide Corp., Kenilworth, N.J. Space No. 1600.

Use postpaid card. Circle No. 621

Critical aircraft tolerances "duck soup" with



Mr. V. V. Thornberry, Gen'l. Mgr.
with some of the parts made by
Carmel Screw Products Co.



Buck **AJUST-TRU** **POWER** **CHUCKS**



**INDIANA FIRM
BUILDS PRECISION
REPUTATION
SPECIALIZING ON
AIRCRAFT PARTS**



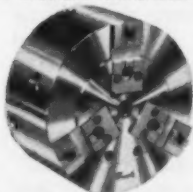
65% of the more than 200 parts on this display are made with the 7 Buck Power chucks used by the Carmel (Ind.) Screw Products Co., specialists in aircraft parts.

Typical comments by Mr. V. V. Thornberry on Buck performance include: "We thread class 4 tolerances with face run-out held within .001" (and less) indicator reading of pitch line of thread"... (another job) "Tolerances are held to better than the Buck guarantee of .001" precision in relation to bore and face with no difficulty..."

At Carmel the Buck Jaw Turning Fixture is used to fabricate jaws in the tool room without having to tie up a production machine.

More and more firms every day are learning that "It pays to chuck with Buck." Send for catalog — see why.

Buck
POWER CHUCKS



6½"-8¼"-10"-12"

BUCK TOOL COMPANY

412 SCHIPPERS LANE • KALAMAZOO, MICH.

Use postpaid card. Circle No. 370

April, 1958

229

Blocks, riser



AIR LIFTS GRANITE RISER BLOCKS. Granite riser blocks weighing 300 lb. actually float on an air film about .008" thick while being positioned on the surface plate. The blocks allow the use of standard height gages in precise checking and measuring of large parts. They also eliminate erroneous readings caused by vibration and chatter. Air is piped into a hole in the back of the block and led to a series of grooves on the bottom surface. **Herman Stone Co., Dayton, Ohio. Space No. 2046.**

Use postpaid card. Circle No. 622

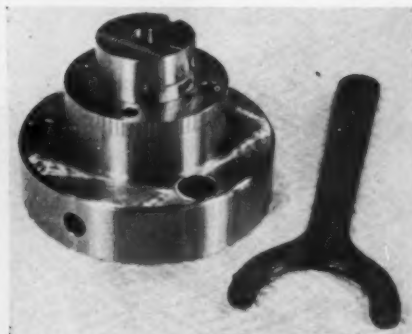
Boring Bars



KENNAMETAL ENCASED KENDEX BORING BARS utilize the high YME of carbide to minimize deflection and chatter on precision boring, and incorporate indexable "throw-away" inserts. Style KA has a triangular positive rake insert, and style KB a square positive rake insert. **Kennametal Inc., Latrobe, Pa. Space No. 1605.**

Use postpaid card. Circle No. 623

Boring Heads



SMALL BORING HEADS employ the principle of easy adjustments of .0001 without loosening or tightening screws. These heads, due to their small outside diameters, can be used in clusters where several holes are to be bored at one time, maintaining close center distances. Variation in designs allow them to be mounted to all types of spindles. The boring tools used in these heads are usually of the solid carbide or carbide tipped, replaceable bar-type. Heads may be operated at extremely high spindle speeds due to their light weight, short overhang and small diameters. Illustrated is one of the many designs of this type of boring head manufactured by the **Briney Mfg. Co., Pontiac, Mich. Space No. 203.**

Use postpaid card. Circle No. 624

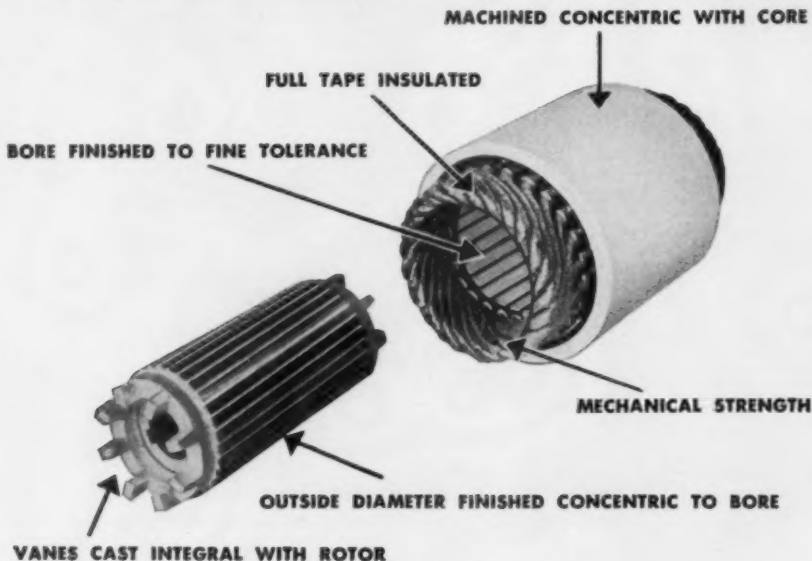
CALIBRE OFF-SET BORING HEAD

is compact with a minimum of component parts. The built-in adjustable wedge compensates for wear on the tool carrier slide. Also, the whistle notch design used for locking the tool carrier slide eliminates any change in the tool setting. A quick and accurate setting of the cutting tool is easily made with the large reading dial, which shows direct reading adjustment to .00025" per graduation on bore diameter. There are two tool mounting holes for straight

Serving the Industry Since 1852



WOODS SHAFTLESS MOTORS



The application of direct motor drive with WOODS' Shaftless Motors to high-speed spindles brings the peak of motive efficiency at relatively small cost. Conserves space—eliminates belts and gears—fewer wearing parts. The extensive and varied lines of WOODS' Shaftless Motors are available for nearly every class of direct application.

Let us tell you how you can achieve a reduction in production costs by direct motor drive.

MOTOR DIVISION

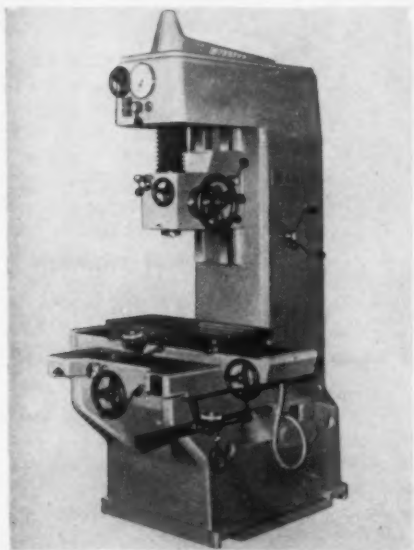
S. A. WOODS MACHINE CO.
27 DAMRELL STREET
BOSTON 27, MASS.

ASTE EXPOSITION . . .

shank tools in the tool carrier slide. These holes with suitable adaptor bushings mount tools with shanks up to and including $\frac{1}{2}$ inch diameter. The boring range is from $\frac{1}{16}$ inch to $\frac{3-5}{16}$ inch diameter. Boring head is easily adapted to all Beaver quick change holders and also to machines which have conventional tapered spindles. **Beaver Tool & Engineering Corp.**, Gaylord, Mich. Space No. 829.

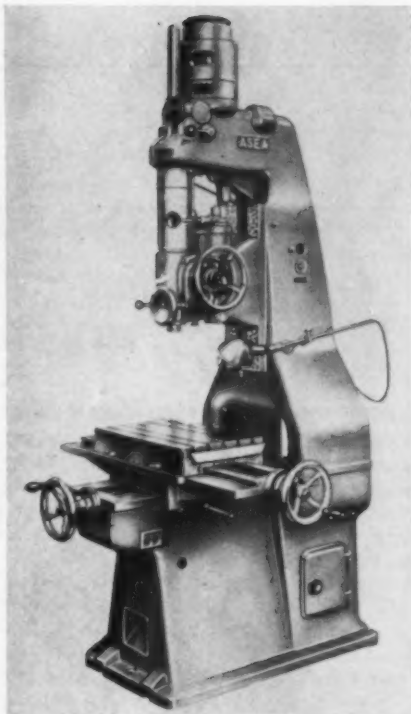
Use postpaid card. Circle No. 626

Boring Machines



NO. 2 OPTICAL JIG BORER, table size 12" x 24, features direct optical positioning which protects against mechanical failure and operator fatigue. Observation is made through micrometric readers at normal distance. Another feature is the magnetic brake on the motor, which stops the spindle instantly when the current is shut off. **Manex Machinery Corp.**, N.Y., N.Y. Space No. 733.

Use postpaid card. Circle No. 627



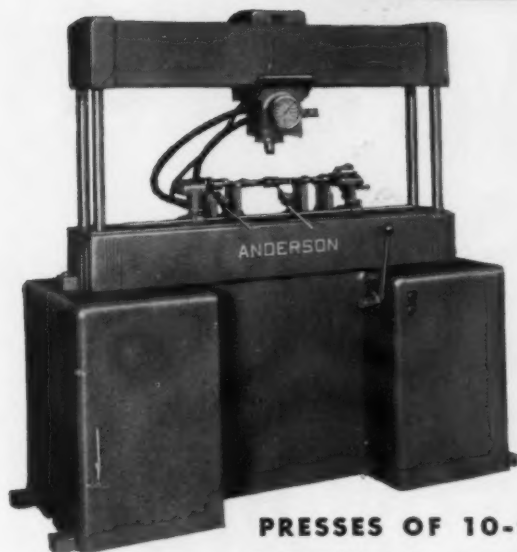
VARIABLE SPEED JIGBORE. The spindle speed of this machine is infinitely variable from 0 to 2400 rpm. The ASEA unit features the micrometer screw measuring method, which enables the work to be placed rapidly and exactly into the correct position and with an accuracy several times better than that obtained by using jigs in an ordinary drilling machine. **Homestrand Inc.**, Larchmont, N.Y. Space No. 729.

Use postpaid card. Circle No. 628

14-TON A.F.9 BORING MILL absorbs vibrations in roughing and finishing at high speeds and is resistant to hard machining at slow speeds and in interrupted cutting operations. The 20 hp of the speeds and feeds motor enables, owing to the efficient cinematic gear-

Speed-up

**YOUR CHECKING AND
STRAIGHTENING JOBS!**



Anderson

**HYDRAULIC
POWER
PRESS**

PRESSES OF 10-25-50 TON CAPACITY

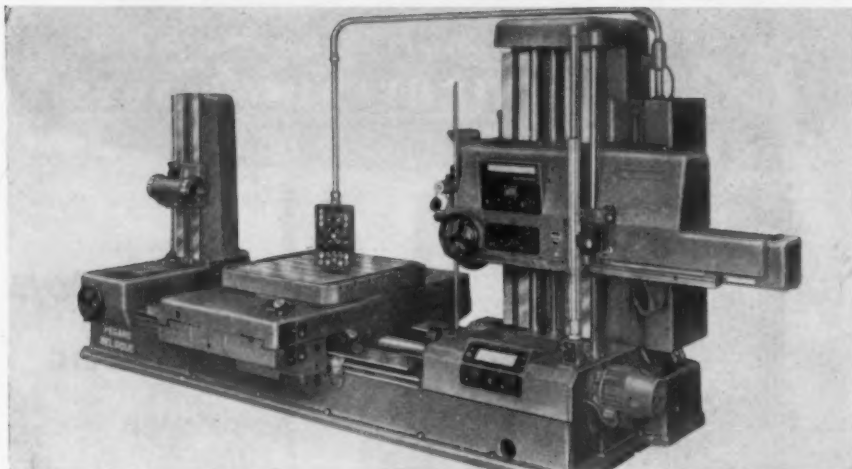
Built with stationary or traveling ram . . . so sensitive a shaft may be straightened to within .001". Straightens and checks in the same position. Flexible, accurate control valve operated by a hand lever. Manufacturers with straightening, checking, and truing operations that require speed and accuracy find Anderson Power Presses to be the answer to their problems.



Write for Bulletin No. 5-4.

**ANDERSON BROS. MFG. CO.
ROCKFORD, ILLINOIS**

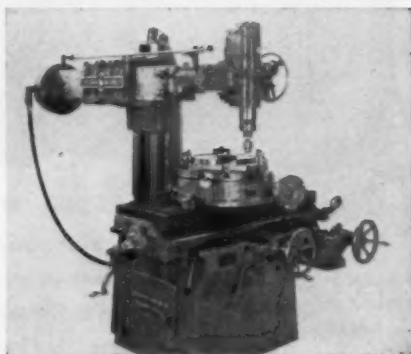
Use postpaid card. Circle No. 372



line, boring and milling operations with maximum chips-output. The reduction of machining dead-times and of operator's fatigue is realized by simplification of controls and the pre-selection of speeds and feeds. There is also instantaneous and simultaneous locking and unlocking of the movable parts, controlled by air compressed-driven-pistons. S. A. Ateliers Marcel Pegard, Andenne, Belgium. Space No. 1348.

Use postpaid card. Circle No. 629

ANGLE MASTER MODEL V.A.H. 25 JIG BORING AND MILLING MACHINE is said to be capable of handling the many complex and trying machining problems arising in tool, die, mold, and fixture work, where precise angular milling and boring is required with a minimum of costly set-up time. The machine allows work piece to be clamped to table top in one simple set-up and from this position all other operations are performed by setting the head, ram, column, and saddles to their predetermined position. Suburban Ma-



chine Co., Cincinnati, Ohio. Space No. 917.

Use postpaid card. Circle No. 630

PFEIFER BORING MILL, German made, uses design principles employed in lathes. The machine is made with its spindle head at the left of the bed. This puts lathe operators in a position to run it. Operational controls are centrally located to have them in easy

Production Inspection is Faster and Easier with a J&L Optical Comparator

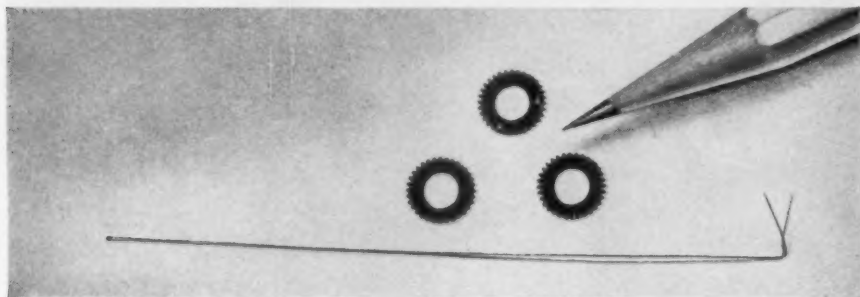
*... and its extreme versatility enables you to perform
inspections that used to be "impossible"!*

More and more electronics manufacturers throughout the country are using Jones & Lamson Optical Comparators in their quality control operations. Small shops, as well as the giants, have learned that a J&L Comparator pays for itself in very short order.

The Comparator's ability to measure and inspect, through shadow magnification, all sorts of parts and objects

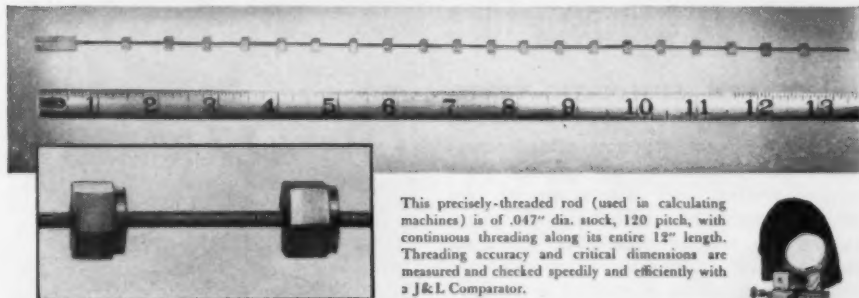
with extreme precision and speed makes it ideally suited for checking electronics components, especially those which are tiny or intricately contoured.

Investigate how the J&L Comparator can help you make your production operations more efficient ... and more profitable. Write today for a free copy of our new illustrated catalog No. 5700.



For Instance — A customer writes: "One of our assemblies, containing 32 separate circuits, measures only $\frac{5}{16}$ " dia. by 1" long. The parts which go into this assembly must have perfect shape and tension, which are impossible to check by mechanical

means. Two such parts are these .005" dia. gold wires, and precisely toothed brush spacers. Since using the J&L Optical Comparator in our inspection, assembly failure due to malfunction of either of these two parts has virtually disappeared."



This precisely-threaded rod (used in calculating machines) is of .047" dia. stock, 120 pitch, with continuous threading along its entire 12" length. Threading accuracy and critical dimensions are measured and checked speedily and efficiently with a J&L Comparator.

Model PC-14

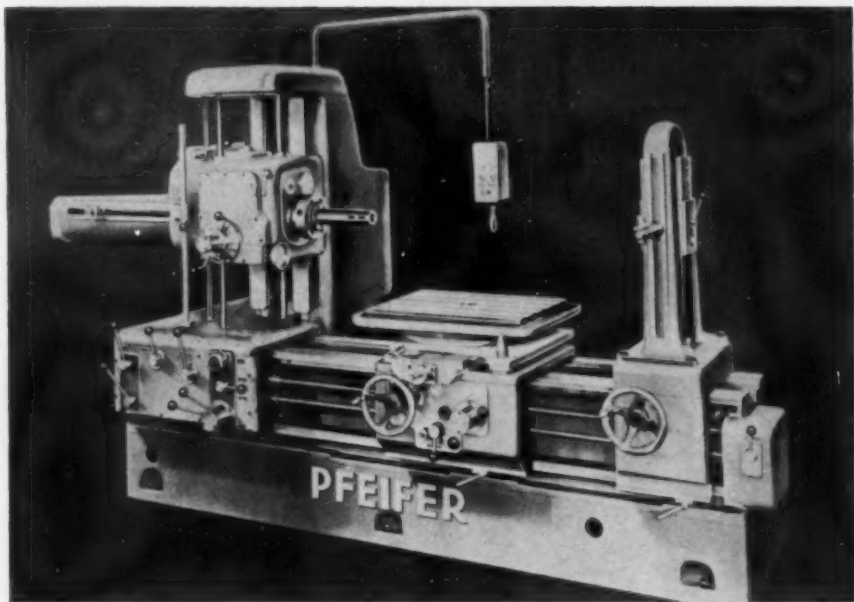


JONES & LAMSON

JONES & LAMSON MACHINE COMPANY, Dept. 710, 520 Clinton Street, Springfield, Vermont



Use postpaid card. Circle No. 373



reach of the operator. Four covered and hardened guideways insure vibration-free saddle traverse and give this movement lasting accuracy. Bedways may be finished by new spot grind method of scraping. **Aaron Machinery Co., Inc., New York City. Space No. 1571.**

Use postpaid card. Circle No. 631

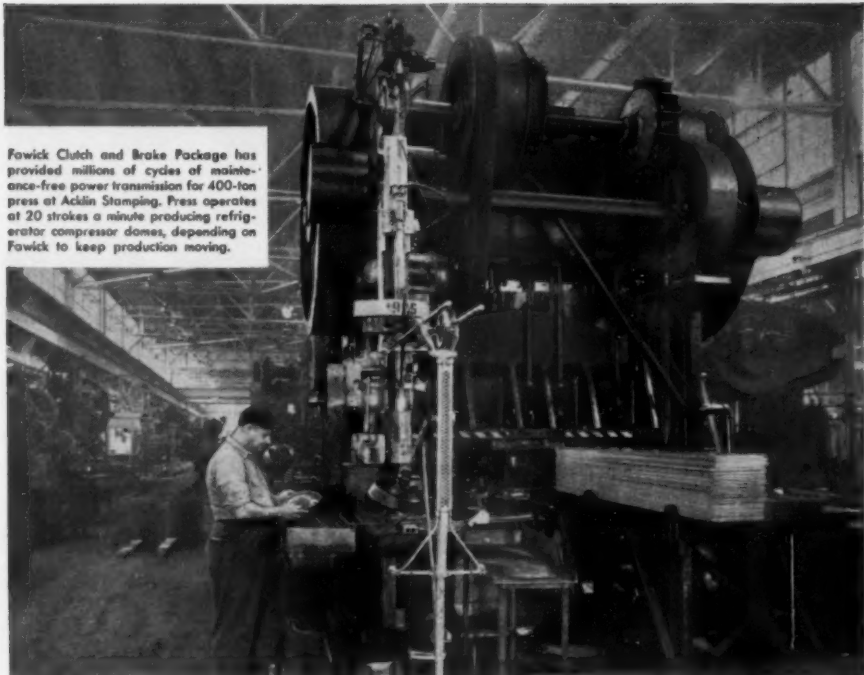
MODEL VBM AUTOMATIC VERTICAL PRECISION BORING MACHINE.

The vertical construction affords convenience of handling workpieces, simplifies tooling, and allows use of two or more spindles. Automatic indexing tables are readily adaptable, allowing loading and unloading of workpieces while the machine is cycling automatically. The machine features a completely automatic cycle which is controlled by a simple plate cam. The cam shaft serves as a common means for timing all machine movements. Feed change gears



make possible an almost infinite variation of the feed rate. **Wadell Equipment Co., Clark, N.J. Space No. 1816.**

Use postpaid card. Circle No. 632



Fawick Clutch and Brake Package has provided millions of cycles of maintenance-free power transmission for 400-ton press at Acklin Stamping. Press operates at 20 strokes a minute producing refrigerator compressor domes, depending on Fawick to keep production moving.

Fawick Clutch and Brake Conversion on this 400-ton press at Acklin Stamping has provided

"new machine" performance for millions of cycles . . . and still going strong!

Dependable power transmission is the heart of today's high-speed, heavy-duty production machinery. It is vital in helping every plant manager achieve his goal—uninterrupted production.

Millions of cycles ago, Acklin Stamping Division of Tecumseh Products Company (Toledo, Ohio) installed a Fawick Clutch and Brake Package on a 400-ton press. Since then, according to Philip C. Wood, Works Manager, "... the press has operated with virtually no lost time or maintenance cost due to clutch or brake."

The press is equipped with a heavy-duty FAWICK VC Ventrorque Clutch and Type "E" Air-Ring Brake, designed and built for the most severe applications. Ventilated construction prevents heat build-up and permits cooler, longer-lasting operation. This reduces wear and lengthens shoe life. Maintenance is restricted to routine inspection, keeping non-productive time and costs at a minimum.

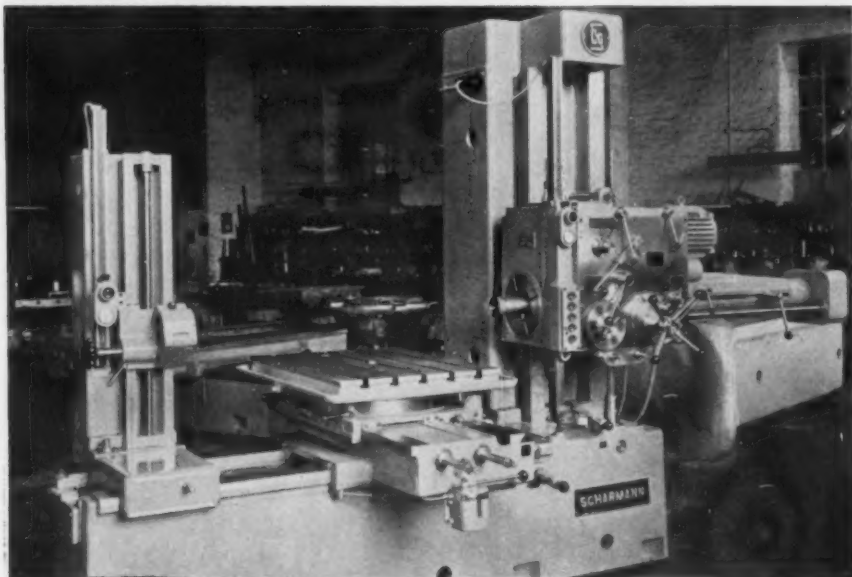
For more information on how you can reduce non-productive time through dependable power transmission, contact your nearest FAWICK representative or the Home Office today.

FAWICK AIRFLEX DIVISION
FAWICK CORPORATION
9919 CLINTON ROAD • CLEVELAND 11, OHIO
In Canada: Fawick Canada, Ltd., Toronto



INDUSTRIAL CLUTCHES AND BRAKES

Use postpaid card. Circle No. 374



WB 75 TABLE-TYPE HORIZONTAL BORING MILL is a universal mill designed for complete finishing of a piece on a single setup; it eliminates the necessity for several single-operation machines. The machine has a 3" boring spindle, a range of 16 boring speeds (which can be optionally increased to 32), 12 feeds, rapid traverse for all movements, automatic tool ejector, and a hand-operated rotary table. It is equipped with an accurate and easy-to-use optical measuring device. **Scharmann Machine Corp., Pittsburgh, Pa. Space No. 1015.**

Use postpaid card. Circle No. 633

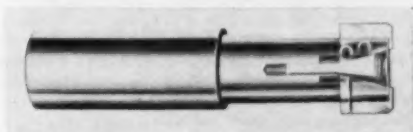
Boring Tools

BORING UNITS. Calibore Self-Lock units can be set to exact part dimensions away from the machine. They are particularly adaptable to production and automated operations which require quick tool changes. Units have resilient,

heat resistant inserts which hold any desired setting until it is required to be changed. They are available in 28 sizes with boring ranges extending from 1/2 inch diameter up. Features: fine increment of adjustment—.0005" on bore diameter per mounting dial graduation; self-wiping ground threads; wide individual unit boring range; sturdy tool carriers with large tip area. **Beaver Tool & Engineering Corp., Gaylord, Mich. Space No. 829.**

Use postpaid card. Circle No. 634

ADJUSTABLE BORING TOOL. Hole sizes produced by this tool can be expanded or reduced without removing blades from bar or removing boring



This is a
knock-out cavity bushing.

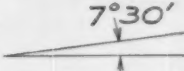


It is used in plastic injection
molding.



It is manufactured by **FASTEX**,

Division of Illinois Tool Works, Des Plaines, Illinois.

It has a  internal taper.

It is ground from hardened
tool steel, 58-60 Rockwell C

The tolerances must be held to 0.0002"

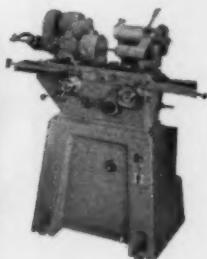


The grinder on which this bushing
and all its cousins are made is a



RIVETT LATHE & GRINDER, Inc.

Dept. MTR 4 Brighton 35, Boston, Mass.



Model 84

An internal specialist
with external ability.
Mounts interchangeable
wheelheads for
internal and external
spindles. Capacities
are 3" diameters,
depth 4". Collets and
step chucks mount
directly in lathe-type
spindle.

ASTE EXPOSITION . . .

bar from the setup. One full rotation of a tapered socket head screw expands cutters .020" on the hole diameter, making possible sensitive adjustments. Both blades are supported by vee tongues riding in vee grooves which maintain alignment of blade edges. Once set, blades are locked in fixed position by twin setscrews. Multiple blade sizes fit each bar size, expanding over-all range. Due to its rigidity boring tool is not limited to finishing, but is capable of heavy cuts for roughing operations. This M-3 h.s.s. cutter is recommended for stainless and tough heat-treated alloy steels as well as abrasive subjects, such as cast-iron and aluminum. Standard bar sizes cover 1¼" to 4½" hole diameters. Other sizes are available on request. **Robert H. Clark Co., Beverly Hills, Calif. Space No. 1901.**

Use postpaid card. Circle No. 635

Brazing Equipment



HIGH-PRODUCTION BRAZING SET-UP. A high-production gas-air machine built specially for the show and capable of producing a complete impeller every

six seconds will demonstrate how low cost stampings and screw machine parts can be joined into strong, light, economical assemblies. **Handy & Harman. Space No. 244.**

Use postpaid card. Circle No. 636

Broaches



PUSH-TYPE MINUTE MAN BROACHES, used in an arbor or hydraulic press, finish to exact size in one pass. They are available in 13 sizes, for ¼" to 1" round holes. They claim greater convenience, speed, and economy in making round holes that must be held to close tolerances and be straight all the way through. Similar in application are square and hexagon broaches, now available in 9 new stock sizes. **The duMont Corp., Greenfield, Mass. Space No. 139.**

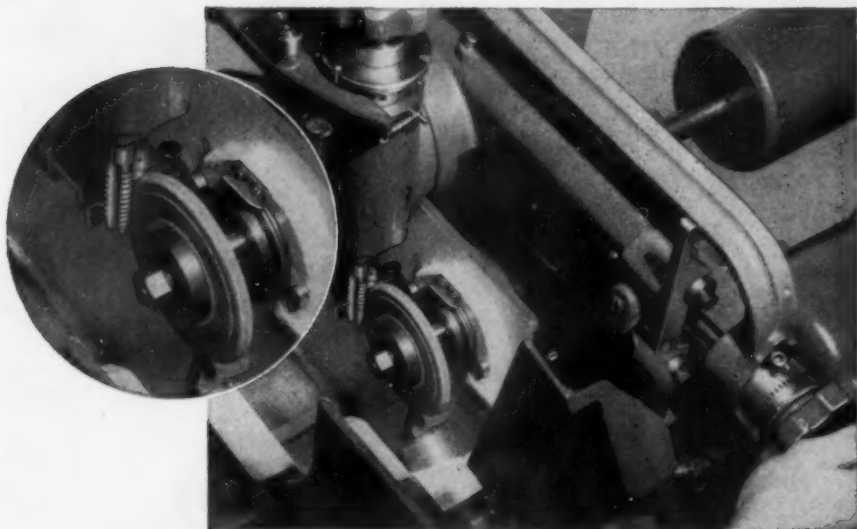
Use postpaid card. Circle No. 637

Brushing Machines

BRUSHAMATIC 51-2L MACHINE is used for brushing O.D.'s and end faces of disc and cylindrically shaped parts. It can hold parts in the range of zero to four ft. in dia., and zero to three ft. in height. Completely automatic cycling is a feature of this equipment which can be programmed to brush parts to a preset specification. Operation after set-up requires only that the operator load the machine, press the starter button and remove the part after the machine comes back to its retracted idle position. The machine is capable of finishing high precision parts

NOW — You can control rake or hook angle and insure accurate indexing of cutting edges* of taps with the BLAKE FLUTE GRINDER.

**Just as necessary on taps as on milling cutters.*



Keep it sharp — Make 1 tap do the work of 6 with The Blake Flute Grinder.

This accuracy will result in uniformity of hole, much longer life for your taps and a surprising savings in tap costs.



Write for bulletins on BLAKE Tap Sharpening Machines

EDWARD

BLAKE

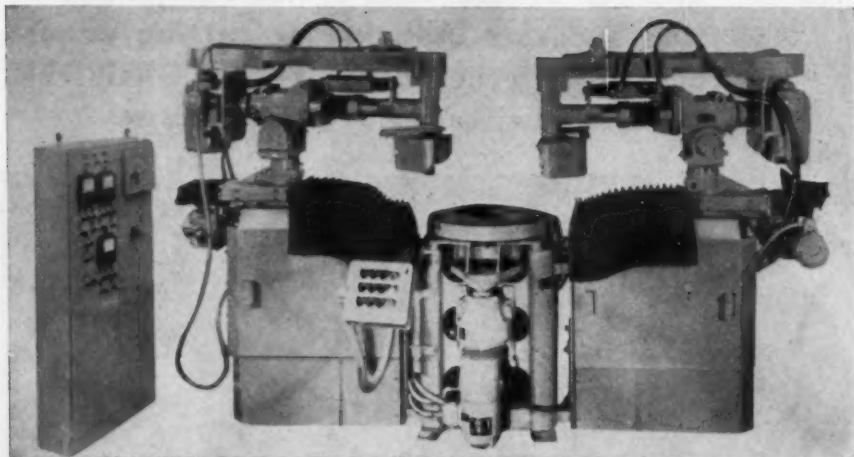
**COMPANY
INC.**

MANUFACTURERS OF FLUTE AND CHAMFER GRINDERS

440 CHERRY ST., WEST NEWTON 65, MASS.

Exclusive Distributors at:

Black Diamond Drill Grinders • Surface Finish Standards • Worcester Drill Grinders.



as aircraft turbine and compressor rotors, spacers, shrouds, turbine buckets, nozzle cases and aircraft brake parts. The Osborn Manufacturing Co., Cleveland, Ohio. Space No. 1434.

Use postpaid card. Circle No. 638

Bushings



DRILL BUSHINGS for plastic tooling, Serr-A-Grip, Hex-A-Grip, and Delt-A-Grip (left to right). First type is for pressing into soft materials. Serrations are made to ease their way in without tearing material; once in—no slipping or rotating. Other types for embedment in castable materials. Deltagrip bushings withstand torque and thrust of tool—they won't spin out. Hex-A-Grip design keeps bushing from rising, lowering or spinning. American Drill Bushing Co., Los Angeles, Calif. Space No. 1749.

Use postpaid card. Circle No. 639

Calibrators



PLANEKATOR is an instrument which uses a no-calculation method for calibrating worn surface plates. It can be used to calibrate a surface plate to 10 millionths. At the exhibit two plane-kators will be demonstrated—one will prove the accuracy of a large Rahn laboratory grade surface plate and show how measurements will repeat within 25 millionths anywhere on the surface, and the other will show an actual calibration of a worn surface plate. Rahn Granite Surface Plate Co., Dayton, Ohio. Space No. 403.

Use postpaid card. Circle No. 640

A wheel for every job . . .

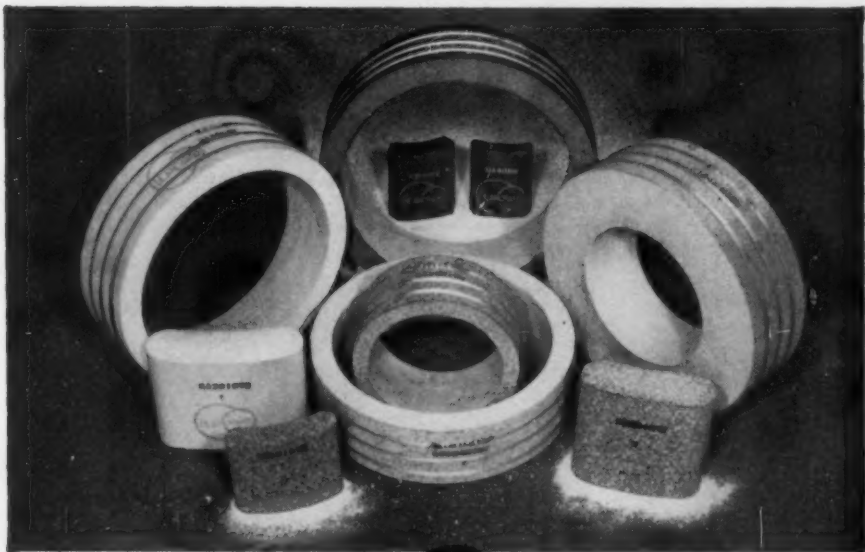
For every surface grinding job . . . whether tough as copper or fragile as glass . . . there's a Blanchard wheel that's best.

Blanchard grinding wheels, for use on Blanchard Surface Grinders, are made in cylinder, segment and sectored types. By selecting from a variety of vitrified, resinoid and silicate bonds and a number of different abrasives, Blanchard is able to make exactly the right wheel for every surface grinding job.

Precision duplication in the manufacture of every Blanchard grinding wheel assures you of identical results on all materials—regardless of finish or stock removal required.

THE BLANCHARD MACHINE COMPANY

64 STATE ST., CAMBRIDGE 39, MASS., U. S. A.



PUT IT ON THE **BLANCHARD**

THE BLANCHARD MACHINE COMPANY 64 State St., Cambridge 39, Mass.

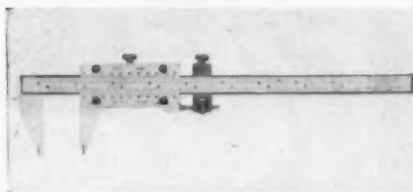
Gentlemen: Please send me free copies of "Blanchard Abrasive Wheels and Segments" and "The Art of Blanchard Surface Grinding" (3rd edition)

NAME _____ STREET _____

FIRM _____ CITY _____ ZONE _____ STATE _____

Use postpaid card. Circle No. 377

Calipers & Dividers



NO. 123 SATIN CHROME MASTER VERNIER CALIPER, now available in a new 6" size, in addition to 12" and 24" sizes, offers easy, fast reading with maximum accuracy. New long 50-division vernier scales with widely spaced, easy-to-read graduations make possible greatly simplified settings and readings without the use of a magnifying glass, making for half as many bar graduations as conventional single or double vernier tools. The L. S. Starrett Co., Athol, Mass. Space No. 1401.

Use postpaid card. Circle No. 641

Carbide Cutting Material



STEEL-CUTTING GRADES OF CARBIDE will be featured at the exhibit. V-R 73 and V-R 77, the two newest grades, are representative of a continuing research program at V-R to aid industry in the economical machining of present-day metals and super alloys. V-R 73 is especially compounded to

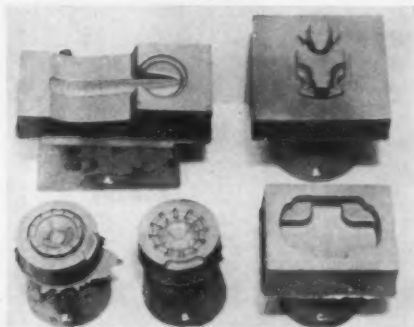
produce maximum results in the minimum shock range with high resistance to cratering and edge wear. Also unveiled will be a complete new line of fixed-base toolholders. The new toolholders are used with throw-away inserts and will be added to the well-known "elevator" toolholder line. **Vascoy-Ramet Corp., Waukegan, Ill.** Space No. 1035.

Use postpaid card. Circle No. 642

FIRTHITE GRADE WF is a new cermet cutting material which contains neither tungsten nor cobalt. This material has a titanium carbide base with molybdenum carbide additions, using nickel as a binder. With this material, it is said to be possible to operate at cutting speeds in excess of those obtained when using conventional tungsten carbides. **Firth Sterling, Inc., Pittsburgh, Pa.** Space No. 202.

Use postpaid card. Circle No. 643

Casting Process



THE SHAW PROCESS, a precision casting technique developed in England, will be shown during the ASTE Show. A number of various tool and die applications will also be on exhibit. Among these will be die casting dies, plastic molds, hobs, milling cutters, forging dies, permanent molds, broaches, rubber molds, glass molds, shell mold mas-



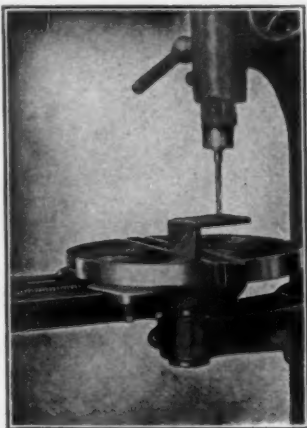
A Dream
for the
**DRILL
 PRESS
 OPERATOR**

Archie operated one of the two drill presses in the maintenance department. He spent about 6 hours a day running back and forth collecting V-blocks, parallels and clamps—and making set-ups for various shapes and sizes of work. That left only 2 hours to drill.

Now he drops in the work, tightens the vise and starts to drill. The other drill isn't needed any more. One drill press, equipped with the Modern Safety Drill Table, easily handles the work of two.

We will put one of these drill tables in your shop and guarantee it will save its cost in labor alone within 6 months. You can't go wrong on a deal like that!

Write for our **FREE TRIAL OFFER**



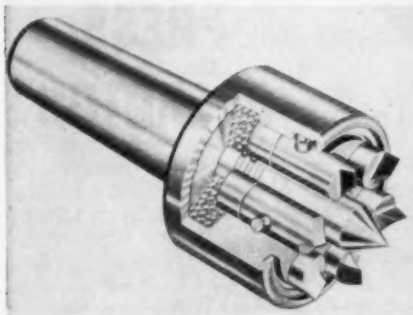
MODERN MACHINE TOOL CO.
 2005 LOSEY AVENUE
 Jackson, Michigan

ASTE EXPOSITION . . .

ter patterns. The process is claimed to offer savings in cost and time. Shaw Process Development Corp., Port Washington, N.Y., a division of British Industries Corp. Space No. 1238.

Use postpaid card. Circle No. 644

Centers

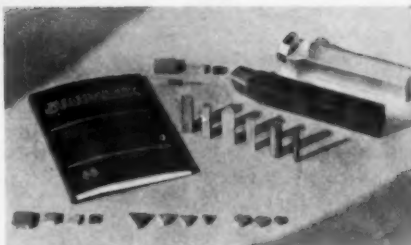


THE IDEAL DRIVING CENTER depends upon basic hydraulic and friction principles to grip one end face of work held between centers, without the use of chucks, clamps, or dogs. The driving action makes use of a circular chamber filled with hardened steel balls, which act as a "fluid," distributing pressure equally to all the driving pins. There are said to be no problems with slack or chatter. The centers fit Morse tapers No. 2 to No. 6, work diam. from .407" to 6.375". Ideal Industries Inc., Sycamore, Ill. Space No. 1650.

Use postpaid card. Circle No. 645

Ceramic Blanks

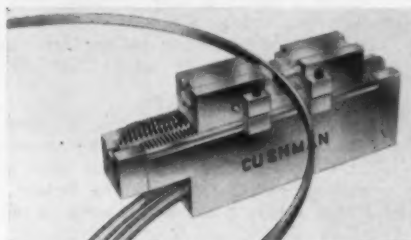
STUPALOX OXIDE CUTTING TOOLS will be exhibited. Stupalox, a sintered aluminum oxide cutting tool material (hard, tough, and wear resistant) claims to have capabilities beyond present day machine tools. Also featured will be Stupalox toolholders—rugged and precision made, with serrated adjustable



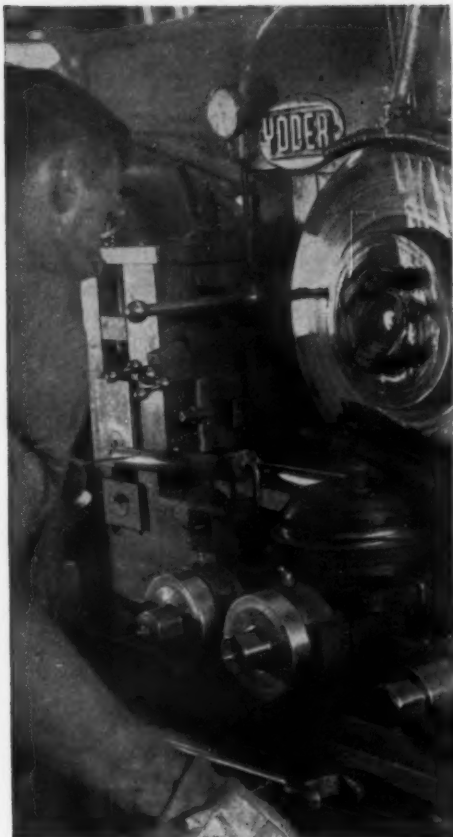
chipbreaker clamps. Stupalox single point cemented cutting tools, recently announced, will also be shown. Inserts cemented to a steel shank with an epoxy resin cement present an innovation in single point oxide tools. These tools have provided the answer to high speed machining where limitations of part, machine, or tool have precluded the use of throwaway tooling. Research & Development Div., The Carborundum Co., Latrobe, Pa. Space No. 709.

Use postpaid card. Circle No. 646

Chuck Jaws



AUTOMATIC PINCH JAWS, originally designed as a component used in the manufacturer's automatic pinch type chuck, have a wide application for use on face plates, milling machine or jig boring machine tables. Operated by air, each jaw is of the floating or compensating design, adjusting themselves automatically with the slightest resistance to the gripping surfaces of the workpiece. A maximum pinch of over 2000 lb. at 85 psi is possible for each



Monroe Shock Absorbers rely on performance of YODER Tube Mills!

After 15 years of continuous operation the Yoder Type-M Electric-Resistance Weld Tube Mill shown here is still producing precision tubing for the Monroe Auto Equipment Co., Monroe, Mich.

Yoder produced tubing is the basic component of the famous "Monro-Matic" shock absorber. Measuring $2\frac{1}{4}$ " outside diameter (plus several other sizes) the tubing is made from 22 gauge strip in one continuous operation... it is automatically cold-roll formed, welded and cut to pre-determined lengths.

This typical installation of a Yoder tube mill exemplifies the accuracy, dependability and production economies of Yoder-made tubing. If your business requires pipe or tubing, ferrous or non-ferrous, in sizes $\frac{1}{4}$ " to 26" diameters, there is a Yoder mill designed to produce it economically, efficiently and accurately.

THE YODER COMPANY

5509 Walworth Avenue • Cleveland 2, Ohio



Check into the many cost-saving advantages of operating a Yoder pipe or tube mill... write for the fully-illustrated 88-page Yoder Tube Mill Book... it is yours for the asking.



PIPE AND TUBE MILLS (ferrous or non-ferrous)

COLD ROLL FORMING MACHINES

ROTARY SLITTING LINES

ASTE EXPOSITION . . .

pinch unit. An important non-lift feature eliminates time-consuming checks and adjustments. Workpiece lift is held to less than .0002" per pinch unit. Air pressure is not maintained, because the pinch jaw itself is a self-locking device once set, the workpiece is automatically locked by the screw which operates the pinch unit on the same principle of a standard hand operated chuck. **The Cushman Chuck Co., Hartford, Conn. Space No. 1439.**

Use postpaid card. Circle No. 647

STEEL AND ALUMINUM SOFT CHUCK JAW BLANKS, holding devices, clamps with plastic tips, box jigs, jig legs, and a line of steel and aluminum jig plates will be featured at the show. **Jergens Tool Specialty Co., Cleveland, Ohio. Space No. 1672.**

Use postpaid card. Circle No. 648

Chucking Machines

TRAUB MODEL AF 130 SINGLE SPINDLE CHUCKER features an air chuck with over 5" capacity. The spindle brake is equipped with an electromagnetic clutch, and there is ample, easily-accessible chip-room provided in the base. The chucker is recommended for turning, facing, boring, forming, etc., of all types of metal parts. **Guthery Machine Tool Corp., Long Island City, N.Y. Space No. 1204.**

Use postpaid card. Circle No. 649

Chucks

HIGH SPEED POWER CHUCK has tapered gibs to take up jaw and keyway wear. It was designed primarily for the higher spindle speeds needed to take full advantage of high speed cutting tools, but can be used on any automatic. A mid-section of aluminum and new design jaws reduce weight by 40%, which is said to result in easier starts and

quicker stops to reduce machine brake wear and maintenance costs. Lighter jaws mean less centrifugal effect for better maintained gripping at high speeds. The manufacturer states that the outstanding feature of the chuck is the take-up for wear provided by two tapered gibs, working on tapered keyways, under each jaw. Ways, jaws, and gibs are hardened and ground. Tightening the gibs brings back original accuracy in a matter of minutes. Taking up wear eliminates the rocking of master jaws to prevent bell-mouthing. **Buck Tool Co., Kalamazoo, Mich. Space No. 804.**

Use postpaid card. Circle No. 650



SUPREME KEYLESS CHUCK, for portable drills, has been made possible through the application of the ball bearing screw principle of construction. It is possible for a mechanic to tighten the Supreme keyless by merely turn-



Bringing blueprints to "life" in the shop means time-wasting interpretation and re-interpretation. But—to punch any hole with a Wiedemann Turret Punch Press—the operator needs only the X and Y hole dimensions, and the turret station number as listed on a simple work chart.

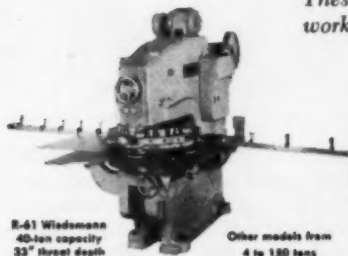
Then, in a matter of seconds, he merely:

1. Turns the turrets to required station number—once per tool size.
2. Positions back gauge to Y dimension.
3. Places a quick-acting stop at X dimension . . . and punches the hole(s).

Any number of holes are accurately located and pierced in rapid sequence. From 12 to 32 different punches and dies are in the turrets ready for use, and any of hundreds of other tools can be substituted in two minutes or less. Tools can include rounds, squares, louvers, groups, extrusions, knockouts . . . from 0.093" dia. to 7" dia. . . larger openings and notches are produced easily with a series of "hits."

High speed Wiedemann operation without layout or setup . . . plus low cost tooling . . . plus use of a simplified work chart adds up to savings of 60% to 90% on short to medium run piercing.

These savings can be yours. Send drawings of your work for time study, and write for Bulletin 301.



8-61 Wiedemann
40-ton capacity
33" throat depth

Other models from
4 to 180 tons

Ask any WIEDEMANN User

WIEDEMANN
MACHINE COMPANY
TURRET PUNCH PRESSES

4265 Wissahickon Ave.

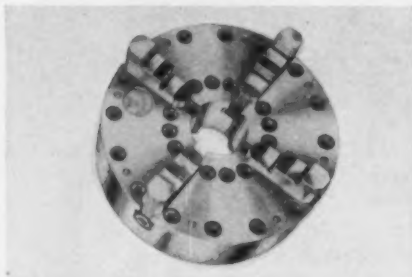
Philadelphia 32, Pa.

Use postpaid card. Circle No. 380

ASTE EXPOSITION . . .

ing up the barrel of the chuck with his fingertips. The chuck will not jam; will not loosen during drilling; and will always operate within acceptable limits of runout, according to the announcement. It is obtainable in two models—one for electric drills, the other for airdrills—both fitting the $\frac{3}{8}$ " x 24 drill spindle. **Supreme Products Corp., Chicago, Ill. Space No. 734.**

Use postpaid card. Circle No. 651



3-JAW UNIVERSAL GEARED SCROLL CHUCKS feature construction in which the jaw slots are formed by separate, hardened and ground segmental plates which are subsequently mounted on the chuck body. The chucks are of forged steel or aluminum alloy. All are furnished with Style No. 6 American standard tongue and groove type reversible jaws, and are available from 8" through 15" dia. for application to American standard spindle noses, Types A, D, and L. **The Whiton Machine Co., New London, Conn. Space No. 1163.**

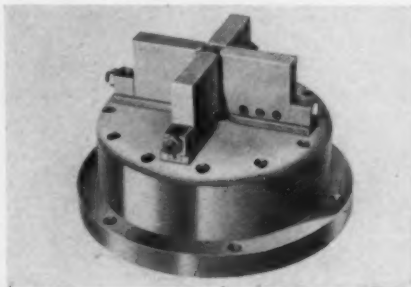
Use postpaid card. Circle No. 652

STACE MODEL 41A AIR CHUCK provides either internal or external chucking. Tolerances are claimed easily held within .0005 t.i.r. Versatility is achieved by means of the "Magic Air Cap", a 1" by 1 $\frac{1}{2}$ " cap located on the large o.d. of the chuck, easily accessible to the op-



erator or setup man. All that is necessary to reverse the chucking direction is to remove four screws from the cap, rotate it 180° and replace the four screws. A large variety of chuck jaws is provided as standard equipment and specials are available upon request. Self-contained air chamber eliminates the necessity of an external pressure chamber and draw-bar arrangement. **Crodian & Co., Indianapolis, Ind. Space No. 1853.**

Use postpaid card. Circle No. 653



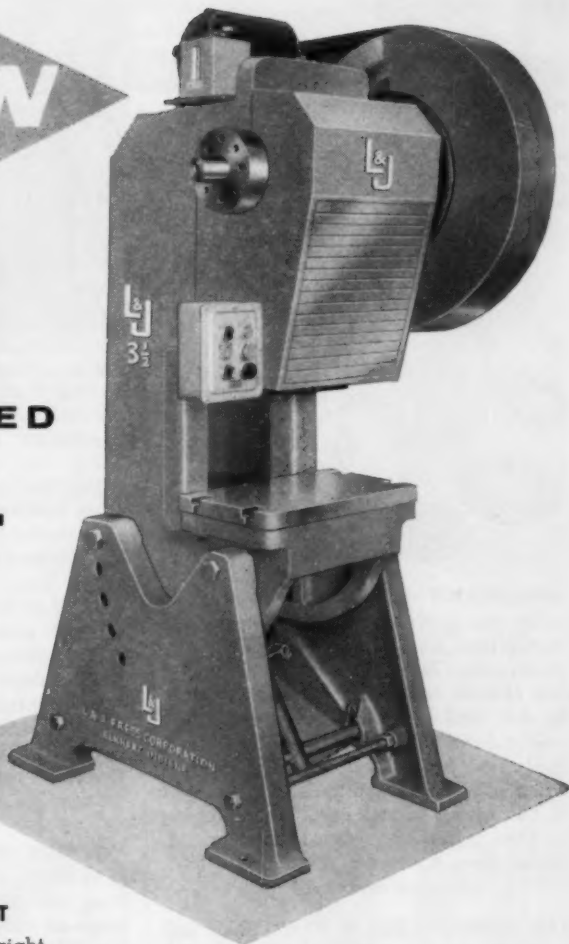
PRECISION CHUCKING EQUIPMENT Tork-Lok collet arbors, and Cone-Lok jigs will be exhibited. The manufacturer will highlight standardized workholding devices, and the adaptation of

NEW



HIGH SPEED

Multi-Duty Press



OPTIONAL EQUIPMENT

Oil shield. Air clutch. Left or right fly wheel mounting. Variable speed drive. Automatic feed. Automatic misfeed stop. Accurate top stop. Push button or dial speed controls. Electric speed indicator, etc.

Straight Side Punch Presses
Single and Double Crank
 Versatile, fast for volume production of small parts with large or progressive dies. 20 to 150 tons.

- New 27 ton press with many advantages.
- Improved frame design for greater rigidity, better accuracy and longer die life.
- Fully enclosed for extra safety and cleanliness.
- Speeds to 450 s.p.m. at 1" stroke (2½" std.).
- Efficient at all speeds—on all jobs.
- Readily adaptable to special jobs at low cost.

WRITE for complete information — 23 O.B.I. geared and non-geared presses, 14 to 90 tons.

L & J PRESS CORPORATION
 1625 STERLING AVE., ELKHART, IND.

ASTE EXPOSITION . . .

standards to specially designed fixtures and tools. Other products on display will include the Zero Spindle inspection fixtures, universal clamping fixtures, and Tork-Lok fixtures. Illustrated is a standard diaphragm chuck. **N. A. Woodworth Co., Detroit, Mich. Space No. 412.**

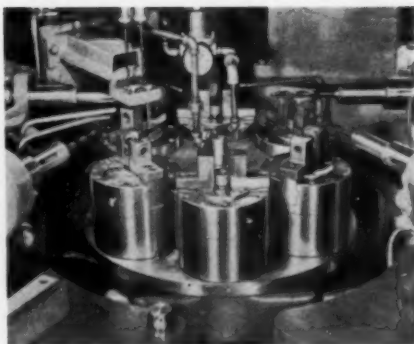
Use postpaid card. Circle No. 654



RINGSPANN DISCS are claimed to solve the problem of chucking round workpieces simply, efficiently and concentrically. They have the shape of a flat slotted ring with a taper between its o.d. and i.d. The slots start alternately from the i.d. to the o.d. This has the effect of enlarging the diameters when pressure is applied and the height of the spring is reduced. The clamping is thus effected accurately. **Karl A. Neise, New York City. Space No. 1857.**

Use postpaid card. Circle No. 655

SIX POWER CHUCK FIXTURES will be utilized by a multi-spindle indexing machine to triple the production of electric valve bodies at this exhibit. The machine will also demonstrate the versatility of the power chuck fixtures in adapting to dozens of variations of the standard setup. Product change-overs can be made simply by changing top blank jaws, a matter of 30 minutes or less. To speed the manufacture of valve bodies, the power chuck fixtures hold the parts for simultaneous drill-



ing and tapping operations at four indexing stations. As a result, the production of 1000 valve bodies, which heretofore consumed more than 13 hours, now requires only 4.3 hours. The valve bodies will also be machined more accurately, it is claimed, because each part is held in one fixture throughout all four drilling and tapping operations. The jaw is used to guide the drill, thus becoming a drill jig—a new concept combining work holding and drill guiding in one compact unit. Air is distributed directly to the power chuck fixtures by a new rotating air valve that is also being introduced at the show. **The Skinner Chuck Co., New Britain, Conn. Space No. 1448**

Use postpaid card. Circle No. 656

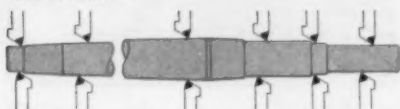
NO. 1015 PERMANENT MAGNETIC MACHINE CHUCK, 10" wide and 15" long, all-steel faced, is said to hold large or very thin parts with complete security on any part of the chuck face. The "on-off" lever operates easily, and is swivelled for further convenience. In the "off" position, the work is not only released, but is completely demagnetized. The chuck weighs only 69 lbs. and is just 2 5/8" high, thus minimizing machine table inertia, while leaving maximum machine capacity. O. S. Walker Co., Inc., Worcester, Mass. Space No. 1947.

Use postpaid card. Circle No. 657

Talide Tools and Dies Get Results!



Caterpillar Tractor Co., leading tractor and earthmoving equipment maker, has used cost-cutting Talide tools for over 10 years. See below.



CRAWLER TRACTOR AXLE SHAFT

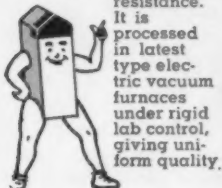
MATERIAL—SAE 8645 Steel Forging, 3.6mm Brinell Hardness.

OPERATION—Turn all diameters, form tapers, shoulders and steps.

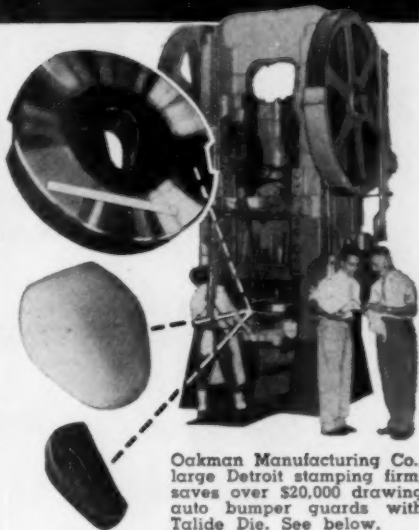
RESULTS—Talide Grade S-92 turned 7 shafts per corner per grind. Total—42 shafts per grind. Inserts ground averaged 6 times. Produced 294 shafts over life of insert. Next best premium carbide grade produced 235 shafts.



Constant Research Pays: Year after year Talide Metal improves in hardness, strength, rupture resistance, and crater resistance.



It is processed in latest type electric vacuum furnaces under rigid lab control, giving uniform quality.



Oakman Manufacturing Co., large Detroit stamping firm, saves over \$20,000 drawing auto bumper guards with Talide Die. See below.

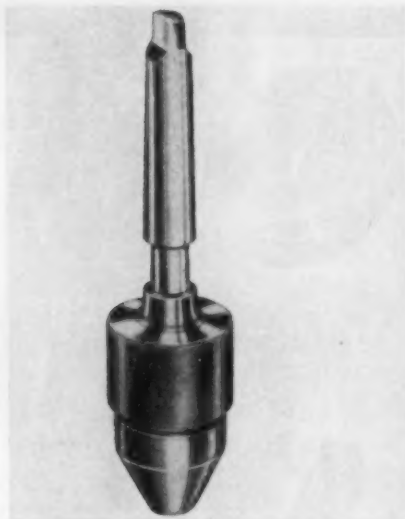
● Old chrome plated die surface had to be stoned every hour—hand polished after each day's run—completely reworked and plated after 60,000 parts. Grade C-80 Talide Die installed over 8 months ago, has drawn over 800,000 parts with no wear evidence. Buffing operation (25c per piece) eliminated due to brighter, smoother, more durable finish with Talide Die.



Metal Carbides Corporation
6001 Southern Blvd.
Youngstown 12, Ohio



HOT PRESSED AND SINTERED CARBIDES • VACUUM METALS
HEAVY METAL • ALUMINUM OXIDE • HI-TEMP. ALLOYS
OVER 25 YEARS' EXPERIENCE IN TUNGSTEN CARBIDE METALLURGY

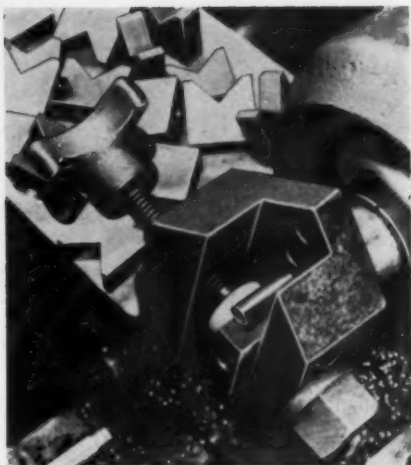


AMF WAHLSTROM CHUCK Model A, fully automatic, converts 95% lost tool changing time to productive time. A single chuck can do the work of several spindles, according to manufacturer. When the load increases, the grip becomes tighter. There is no stopping of the spindle to change tools. **AMF Tool Division, American Machine & Foundry Co., Bloomfield, N.J. Space No. 1164.**

Use postpaid card. Circle No. 658

Clamping Devices

NYLON-PLASTIC SHOES are pictured in actual use. The operation was that of putting a groove in the V-pads, which are also used with toggle shoe clamps. After two months' use, no signs of wear are said to be evident. The nylon-plastic material is light, tough, and abrasion-resistant. It is resistant to oils, greases, solvents, and most chemicals. Both



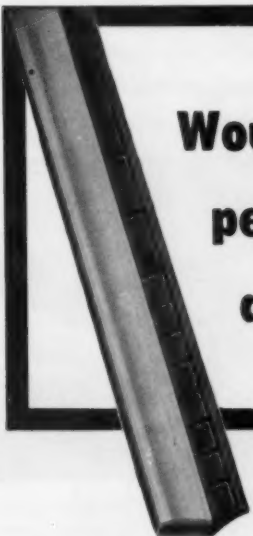
standard and large shoes available. **Northwestern Tools, Inc., Dayton, Ohio. Space No. 968.**

Use postpaid card. Circle No. 659

Cleaners



MODEL R-50 ULTRASONIC CLEANER includes generating units, a heater, temperature control and fil-



**Would you spend
pennies a year to protect
a \$40,000 machine tool?**

**C/R Way Wipers prevent
scoring and abrasion of machine tool ways!**

A 36-inch vertical milling machine, for instance, costs more than \$40,000. The cost of protecting ways with C/R Sirvene (synthetic rubber) Way Wipers can be measured in pennies per year. In addition, C/R Way Wipers pay for themselves many times over by eliminating downtime and reducing costly master-mechanic maintenance. Precision molded for accurate fit, they wipe ways clean of dirt, chips, fine abrasives, even water emulsions. They fit flat ways, side rails, angles, columns and hydraulic rams. C/R Way Wipers are available in four types for all applications.

*Write for this detailed, illustrated
brochure on C/R Sirvene Way Wipers.*



CHICAGO RAWHIDE MFG. CO.

1223 Elston Avenue, Chicago 22, Illinois

Offices in 55 principal cities. See your telephone book.

In Canada: Manufactured and distributed by Chicago Rawhide Mfg. Co. of Canada, Ltd., Hamilton, Ontario

Export Sales: Geon International Corp., Great Neck, New York

SIRVENE



DIVISION

**CHICAGO
RAWHIDE**

ASTE EXPOSITION . . .

tration and recirculation systems. Rating of the ultrasonic section is 250 r-f watt average, with a peak on pulses of 1 kw. Having an over-all size of 22 x 19 x 37 in. high, the self-contained unit is easily wheeled to the most suitable location. Designers, engineers, and draftsmen can have their lettering pens cleaned at the booth free of charge. **Branson Ultrasonic Corp., Stamford, Conn. Space No. 745.**

Use postpaid card. Circle No. 660

Coatings



"STOP-OFF" MASKING COMPOUND for electro-plating operations, Thermo-Cote N-4 (55), should be used in a molten state at 350° F. A thermostatically controlled melt tank is recommended. The object to be masked should be clean and ready for plating. It is then dipped into the compound. The resultant coating will dry within 60 seconds. It can then be cut to the stop-off line or lines. After the plating operation is completed, the coating is removed by simply peeling it. Used coatings can be remelted. Suited for all types of plating solutions, including chromium, nickel, cadmium, copper. **Bischoff**

Chemical Corp., Ivoryton, Conn. Space No. 2148.

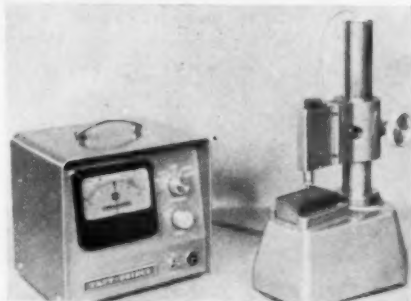
Use postpaid card. Circle No. 661



V-12 VINYL COATING, designed primarily for the protection of metal surfaces, is a cold application strippable coating. It is manufactured in clear and transparent colors and is easily applied by brush, dip, spray, and roller coating. **Bischoff Chemical Corp., Ivoryton, Conn. Space No. 2148.**

Use postpaid card. Circle No. 662

Comparators

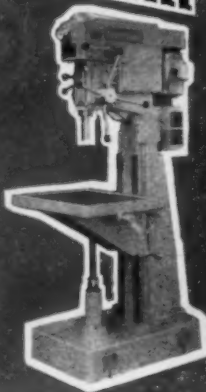
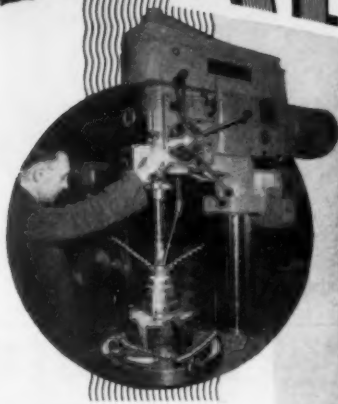


VERSACHEK AMPLIFIER AND COMPARATOR STAND. The Versachek is an electronically operated gage that converts minute dimensional variations to voltage changes and amplifies them to be read on a large meter with widely

Drill better, faster, and
more economically with

stepless

ALZMETALL



Heavy Duty Drill Presses
Hole Capacities from 1" to 2-1/2"

ALZMETALL Machine Tool Factory & Foundry Ltd., Altenmarkt/Alz, W.-Germany



Ball Machinery Co.
939 West Lake Street
Chicago 7, Illinois

Joseph Beal & Co.
87 Binney Street
Cambridge 42, Mass.

Botwinik Bros. of Mass., Inc.
2 Sherman Street
Worcester 1, Mass.

Fidelity Tool Supply
309 Vine Street
Camden 2, N.J.

Fuchs Machinery & Supply
2401 No. 11th Street
Omaha 2, Nebraska

Hudson Basic Machinery Corp.
25-20 43rd. Avenue
Long Island City 1, N.Y.

McDonald Machinery Co.
1531-37 No. Broadway
St. Louis 6, Mo.

Nemis Machinery Co.
20 Cottage Grove, S.W.
Grand Rapids 7, Mich.

W. F. Wolf Machinery Co.
2910 Santa Fe Avenue
Los Angeles 56, Calif.

SEE THEM IN ACTION AT THE A.S.T.E. SHOW—BOOTH NO. 1470

Sales service and parts available through authorized distributors.

STANLEY SHEPPARD

U. S. REPRESENTATIVES

30 CHURCH ST.

NEW YORK 7, N.Y.

ASTE EXPOSITION . . .

spaced graduations, Gaging is based on a comparison of product dimensions to gage blocks or other suitable masters. It is furnished with four magnifications—400:1, 2,000:1, 4,000:1, 20,000:1—providing the following meter graduations: .0005", .0001", .00005", and .00001". To protect operator from reading the wrong scale, a red pilot light on the meter face indicates value of each graduation in use. A circuit feature provides an automatic electronic calibration check without reference to masters. **The Taft-Peirce Mfg. Co., Woonsocket, R.I. Space No. 219.**

Use postpaid card. Circle No. 603

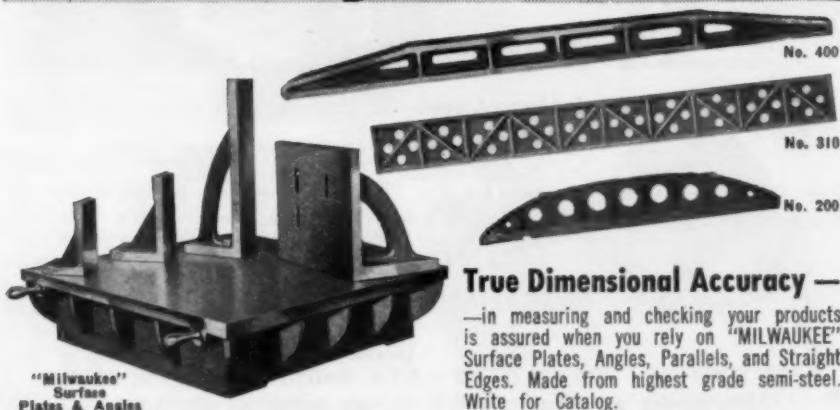
BIG TWIN 18 OPTICAL COMPARATOR offers a large 18" diameter image screen, as well as duplex operational features. It can be used as a floor-type or bench-type model. Lenses to provide magnifications of 10X, 20X, 25X, 31½X, 50X, 62½X, and 100X are avail-



able as standard equipment. **Portman Instrument Co., New Rochelle, N.Y. Space No. 434.**

Use postpaid card. Circle No. 664

MILWAUKEE *Precision* EQUIPMENT



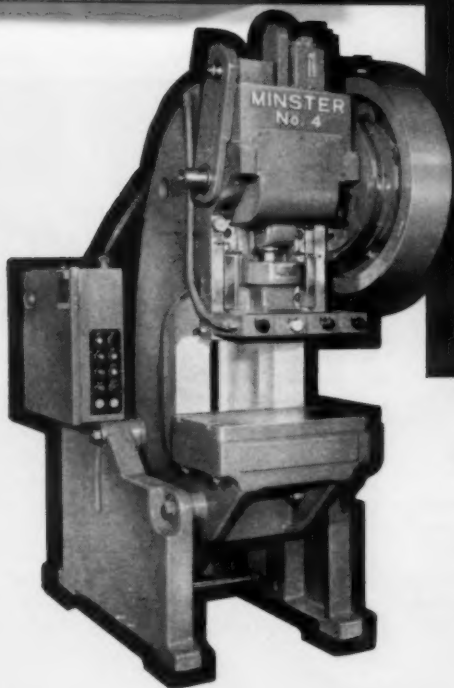
"Milwaukee"
Surface
Plates & Angles

True Dimensional Accuracy —

—in measuring and checking your products is assured when you rely on "MILWAUKEE" Surface Plates, Angles, Parallels, and Straight Edges. Made from highest grade semi-steel. Write for Catalog.

J. C. BUSCH COMPANY *Engineers & Machinists*
SINCE 1907
165 S. BARCLAY ST.
MILWAUKEE 4, WISCONSIN

Use postpaid card. Circle No. 385



You Helped Design The Improved **MINSTER O.B.I.**

You, as a press user, have often told us what features you wanted in an O.B.I. to improve your press operations. Most of the design changes in this improved Minster O.B.I. are based on your ideas, desires and demands.

CENTRALIZED CONTROL CABINET CONVENIENTLY LOCATED . . . NEVER INCLINES

For convenience and better operation, control cabinet mounted on leg remains vertical when press is inclined; is subject to less operational shock and easier to maintain.

NEW LEG DESIGN PROVIDES MORE WORKING SPACE

Square-cut legs give operator more room, a comfortable position in front of press. Inclining mechanism in leg and use of movable spacer rod provide more free space under press for tote pans or conveyors.

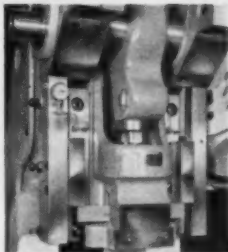
NUMBER	4	5	6
TONS CAPACITY	32	45	60

Flywheel or geared type. Drive can be mounted on either side. MINSTER patented Combination Air Friction Clutch and Brake Unit mounted within flywheel or drive gear on crankshaft.



HEAVIER FRAME FOR GREATER RIGIDITY, ACCURACY AND DIE LIFE

Frame closed in on top and front completely encloses bearing caps, thus providing better distribution of work forces. Connection cover keeps press cleaner—no oil drops hit operator.



GREATER CONNECTION STRENGTH — IMPROVED KNOCKOUT

Tail stock type connection screw locking. Increased connection strength and screw support.

T-Slotted Knockout blocks moving against frame surface give more positive knockout, are easier to adjust. No more bracket breakage.

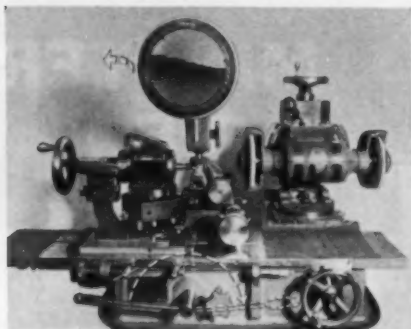


FASTER, EASIER INCLINING

Inclining the press takes less time and labor with ratchet-wrench-operated mechanism located in press leg at normal working height. Die changes are made quickly in vertical position with greater safety, more accurate alignment and less die change-over time.

THE MINSTER MACHINE COMPANY • MINSTER, OHIO

ASTE EXPOSITION . . .



OPTICAL COMPARATOR, integral with the R-O universal form relieving fixture and grinder, is a newly developed attachment mounted on a bracket attached to the grinder. It brings the lens over the work and projects the ground profile, with 20 to 1 magnifica-

tion, on the 8" dia. ground glass. This permits checking progress of the grind and accurate comparison with the enlarged template drawn on the glass. In picture table slides, moving fixture away from wheels; optical comparator then swings into position. **Royal Oak Tool & Machine Co., Royal Oak, Mich. Space No. 519.**

Use postpaid card. Circle No. 665

BENCH COMPARATOR has two new accessories, a surface illuminator and protractor ring. The latter consists of a fixed ring assembly, graduated ring, vernier scale, and clamp arrangement. The graduated ring in which the ground glass screen or chart is held is rotatable within the fixed ring. This ring is graduated into 1 degree intervals that are numbered 180 degrees each way from 0 degree. A double vernier is

The "HEART" of Quality Control
Bedford Gear's
UNIVERSAL INDICATING GAGE

Bedford Precision-Made Products

- Indicator Gage
- Automatic Drill Unit
- Adjustable Chuck Jaws
- Custom Gearing
- Spline Shafts
- Engineering Service

Makes each operator his own inspector!

Progressive manufacturers are finding that the Positive Checking Features of Bedford's Universal Indicating Gage builds confidence in machine operators assigned to precision work.

THESE ADVANTAGES:—

- ELIMINATE** operator fatigue and worry.
- ELIMINATE** inspection slowdowns . . . gage output matches machine output.
- ELIMINATE** "scrap runs" . . . produce only acceptable parts.

ASSURE SUPERIOR QUALITY PRODUCTION!

WRITE FOR FREE CATALOG AND DATA SHEETS



Visit Booth 208 at ASTE Tool Show—Philadelphia
 Use postpaid card. Circle No. 386

18% TUNGSTEN DRILLS AT HIGH SPEED DRILL PRICES

- 18% Tungsten "Qualcut" Steel.
- Flutes ground, lapped and POLISHED for easy cutting—cooler chips.
- Long stage, heat treated for tough abrasive applications.

Write for your 1958 catalog today.



DIAMOND HARD HONING LAP

Actually 95% of diamond hardness, yet only 1/3 the cost of diamond. Produces smooth finish on tool steels and the hardest carbide tools. High density and quantity of hardgrains guarantee long life and even cutting action.

GRITS: 180, 220, 360, 500. \$9.75 each



MICRO DIVIDER SETTER

Precision device for accurate setting of dividers. Accurate to 0.001". An invaluable aid to toolmakers, draftsmen, lofting engineers and layout men. Silver and chrome scales, handsome crackle finish. Complete with case—\$7.50

ATECO

AIR TRANSPORT EQUIPMENT, INC.
AMITYVILLE, NEW YORK

"Agents & Dealers Wanted, Territories Open, Write."

ERRINGTON TAPPERS . . .

the
COMPLETE LINE . . .

the
LEADING LINE
SINCE 1891



FRICTION

For blind holes, tapping in steel, copper, etc. wherever there is danger of breaking taps.

Errington specializes in the manufacture of high speed multiple drilling and tapping attachments. The name Errington is your assurance of top-quality products . . . your assurance of the finest and most modern tools to produce first-grade workmanship at minimum operating costs.

QUICK-CHANGE

Tool-Holders to Drill, Tap and Set Studs, etc., without moving work, or stopping or reversing machine. Individual friction adjustment in each tap-holder, if required.

POSITIVE

For through holes where work is drilled and then re-handled and tapped.

BALL BEARING CONE-DRIVE

Designed for Ball Bearing High Speed Drill Press.

These Tappers may also be adapted for button or acorn die threading.

Write for Complete Information

ERRINGTON Mechanical Laboratory, Inc.

Established 1891

Main Office and Plant STATEN ISLAND 4, NEW YORK

See Us At Booth 1076 ASTE Show, Philadelphia

Use postpaid card. Circle No. 388

ASTE EXPOSITION . . .



mounted on the fixed ring to provide a least reading of 5 minutes of arc. The surface illuminator consists of a 50W, 115V lamp, a fixed condensing lens system, a mirror and a focusable projection lens. The projection lens concentrates the available light on the area covered by each objective used with the bench comparator. Surface illumination and projection illumination may be used simultaneously. **Bausch & Lomb Optical Co., Rochester, N.Y. Space 119.**

Use postpaid card. Circle No. 666

14" BENCH COMPARATOR, for inspecting edges of turbine blades and vanes, incorporates two illuminating units, and a manually operated, blade orienting fixture. The light is projected, thru cone-type light tubes, past the knife edge, onto the blade to be inspected. Shadow thus formed can be inspected on the viewing screen. **Jones & Lamson Machine Co., Springfield, Vt. Space No. 1504.**

Use postpaid card. Circle No. 667



FINE PATTERN on 11" diameter "plunger" forms molding surface for press to make abrasive wheels. The Carborundum Company.

Airkool-S retains precise size and shape through heat treatment

Forming this precise pattern is easily accomplished with Airkool-S, a tough, sulphur-bearing, air-hardening tool and die steel with good machinability. Its excellent nondeforming properties are important too, because this pattern must be retained, without distortion, through heat treatment.

Because Crucible Airkool-S is consistently uniform and clean, no objectionable irregularities appear on this fine pattern. Further-

more, Airkool-S is much more abrasion resistant than typical oil-hardening tool steels, and is substantially tougher than high-carbon, high-chromium types.

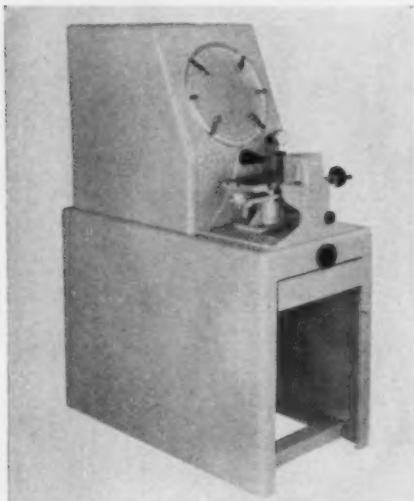
Stocks of Airkool-S and dozens of other special tool steels are maintained in all Crucible warehouses—in a wide range of sizes. *Crucible Steel Company of America, Dept. TD08, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE STEEL COMPANY OF AMERICA

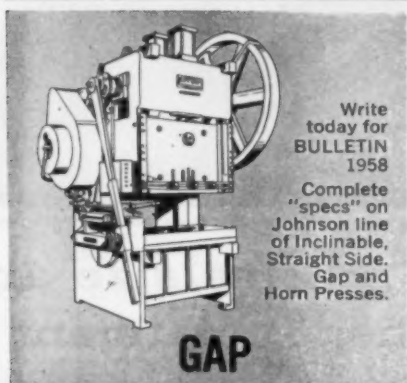
Canadian Distributor—Railway & Power Engineering Corp., Ltd.

Use postpaid card. Circle No. 389

ASTE EXPOSITION . . .



NO. 14 OPTICAL COMPARATOR permits quick, easy precision inspection



Write today for BULLETIN 1958 Complete "specs" on Johnson line of Inclinable, Straight Side, Gap and Horn Presses.

Johnson
POWER PRESSES

JOHNSON MACHINE & PRESS CORP.
620 W. INDIANA AVE., ELKHART, INDIANA

Use postpaid card. Circle No. 390

right out in the shop. Optic arrangement allows its use in bright light. All measurements are read directly from indicators; no need for the operator to add or subtract to determine dimensions. Human error is thus eliminated. This checking unit consists of a cabinet on casters, light source, optical system, protractor graduated in degrees and minutes, 14" diameter image screen, stage with 13"x6" working area and 6" horizontal and 2 1/4" vertical movements. Covell Mfg. Co., Benton Harbor, Mich. Space No. 136.

Use postpaid card. Circle No. 668

Computers



METAL DISC FOR COMPUTING, called Fraction of an Inch Adding Machine, hand size, is for use as an advertising specialty. It permits continuous adding or subtracting of fractions. Sheridan Advertising, Detroit, Mich. Space No. 960.

Use postpaid card. Circle No. 669

Controls

PROBOMAT TAPE-CONTROLLED POSITIONING SYSTEMS are point-to-point automatic positioning devices. The tape control equipment can be applied to drilling, boring, jig boring, milling, etc. The system is applied in two types: The Tele-Probomat for control of leadscrews and worms, and the Pilot

THE UNIVERSAL RADIAL CUTTER GRINDING FIXTURE

Does 5 Operations without removing cutter from its ARBOR!

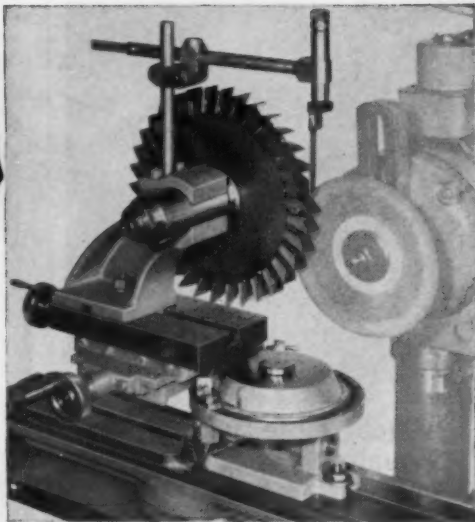
On cutters up to 8" in diameter, the No. 6 fixture, as shown with our No. 6A heavy-duty, right-angle, ballbearing spindle workhead:

Sharpens side teeth on **both** sides.

Sharpens peripheral teeth.

Generates small or large radii on **both** corners of each tooth.

(Other workheads available)



▲ THESE DEPENDABLE GRINDING FIXTURES SAVE THE LIFE OF YOUR CUTTERS. Write for our catalog 603

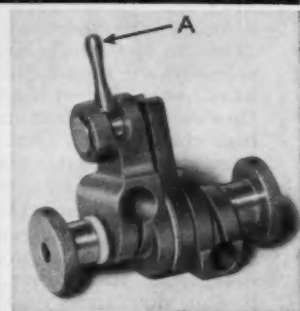


Radial Grinding Attachment D combines with Unit 1A for sharpening end mills with square, conical, or ball nose shapes. ▼

▲ UNIT 1A
This Universal Cutter Grinding Fixture fits any universal tool or surface grinder.



▲ UNIT 4A
Radial Grinding Fixture for sharpening fluted end mills with square, conical, or ball-nose mills. The index disc provides for multi-flute cutters.



▲ NEW FINE-ADJUSTMENT SLIDING SWIVEL GIVES SMOOTH, PRECISE INDICATOR SETTING. Smooth, positive positioning of finest dial indicator is readily accomplished by the fine-adjustment Sliding Swivel. Final precise positioning is accurately made by slight movement of convenient lever "A".
WRITE FOR:
SLIDING SWIVEL FOLDER

ROCHELEAU TOOL & DIE CO.
650D North Main St., Leominster 1, Mass.



**Finest edge holding—
qualities of any saw**

DISSTON

DISS-CROLOY CIRCULAR SAW

For non-ferrous metals and plastics

Maximum hardness combines with toughness! Disston Diss-Croloy Circular Saws are scientifically heat-treated for hardness. For toughness, they're made of high-carbon, high-chrome steel. That's how Disston can give you a saw with superior edge holding qualities.

Reduced sawing costs! Disston Diss-Croloy Circular Saws last longer. Need less frequent sharpening than other saws. Reduce downtime. And—you get more and better cuts from each blade.

Fast, prompt delivery! There's no long wait for a Disston Diss-Croloy Circular Saw! Large stocks are always on hand. Diameters in stock range from 6" to 16". Other diameters are also available.

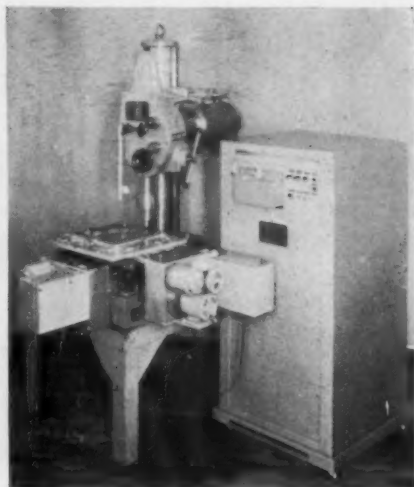
Disston Division, H. K. Porter Company, Inc., Phila. 35, Pa.

H. K. PORTER COMPANY, INC.

DISSTON DIVISION

Use postpaid card. Circle No. 392

ASTE EXPOSITION . . .



Probomat for control of slides and rotaries, independent of leadscrews and worms. Installations include control console with control panel and tape reader, and as many control units attached as there are axes to be controlled. The accuracy potential of the Probomat control is ± 0.0001 " over an axis length of 100". Illustrated is a tape control application to an Oerlikon milling machine. The Warner & Swasey Research Corp., N.Y., N.Y. Space No. 1756.

Use postpaid card. Circle No. 670

FROIL *Rust Preventive* **OIL**

- ✓ Positive barrier against corrosion that lasts for MONTHS
- ✓ Protects any metal—even delicate MICRO-finishes
- ✓ Eliminates fingerprint damage and water spotting.

Write for Data Sheet No. RP-100
"FROIL FOILS RUST"

15 BANK STREET
STATEN ISLAND 1, N.Y.

Use postpaid card. Circle No. 393

MACHINE and TOOL BLUE BOOK

PRECISION MACHINE TOOLS FOR ANY JOB ARE MADE BETTER BY

KAUFMAN



Trying to solve a knotty problem? Kaufman Drilling and Tapping Machines — assembled with our standard units or custom-made to your order — can help you cut production costs. From the engineer's drawing board to final installation, Kaufman's time-proven "know how" is saving money for many of the nation's leading manufacturers. Whether you need a machine for single or multiple operation or a machine for a new, unusual job — see Kaufman. Write or telephone for full information today!



KAUFMAN MFG. CO.

539 S. 29th Street

Manitowoc, Wisconsin

ASTE EXPOSITION . . .

Coolant Spraying Systems

MIST COOLANT PUMPS AND SYSTEMS, as well as a completely new line of high head centrifugal pumps, will be featured. Parts washers for cleaning tools, dies, and individual metal parts will also be included. **Graymills Corp., Chicago, Ill. Space No. 1214.**

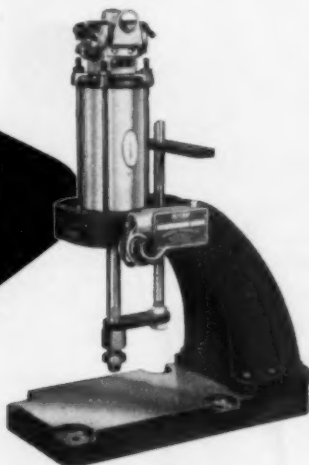
Use postpaid card. Circle No. 671

Countersinks

REVERSE SURFACE COUNTERSINK TOOL, the BakSink, offers a rapid and direct access for cutting angles and radii on reverse surfaces. It can also be used in some back-forming and grooving operations. Designed to offer micro-set accuracy within close tolerances, the tool is adaptable for produc-

**CUT
ASSEMBLY
COSTS**

with this



Bellows AIR PRESS

Arbor stand can be combined with any model Bellows Air Motor of 1¼", 1¾" or 2½" bore to form a compact, rugged air press. Ram clearance 6", throat 5", base plate 6" x 9". Base plates are ground flat both sides and are interchangeable.



Write for Bulletin MS-5RA.

Address Dept. MTB-458.

1009-B

The Bellows Co.

DIVISION INTERNATIONAL PNEUMATIC CORPORATION

AKRON 9, OHIO

Hold mill-like tolerances

CUT ANY METAL...

**DAY IN,
DAY OUT!**



STONE

**MODEL M-100 Chop-Stroke
Cut-Off Machine gives fast,
accurate, fully automatic cutting**

Cuts any stock . . . in a wide range of shapes, lengths and diameters . . . any material, from aluminum to hardened tool steel. The M-100 will cut it swiftly, cleanly, accurately. Set-ups or resets are easily made. The M-100 cuts at a rate of 2 to 4 seconds per sq. in. cross sectional area . . . up to 5 times faster than comparable power cutting. Exclusive Stone geared-in-head motor delivers maximum power to the cutting edge. Greater speed of cutting produces no change of characteristics nor hardening of material cut.

The M-100 is powered by a 10 H.P. continuous duty, TEFC ball bearing induction type motor. Cuts

ferrous metals with an abrasive wheel . . . non-ferrous metals with a saw blade. It comes with fully automatic stock feed and automatic abrasive wheel wear compensator for faster, more accurate cutting without shut-down for adjustment.

The M-100 may be had for manual or semi-automatic operation. For greater power needs, a 15 H.P. motor is available.

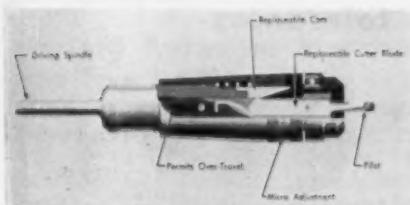
WRITE TODAY for complete information on the Model M-100 and other cut-off machines by Stone. 15 Models available in 3½ to 20 H.P. manual, semi or fully automatic operation. Sales and service in principal cities.

" . . . represented in every major industry throughout the world."

STONE MACHINERY COMPANY, INC.


11 Fayette Street, Manlius, New York

ASTE EXPOSITION . . .



tion use as it requires no specialized equipment, spindle or work-head, and cuts on forward feed only. No tools are required for adjustments or for disassembly. Interchangeable cutters and pilots allow for a range of forms and hole sizes within reasonable limits. Cogsdill Tool Products, Inc., Oak Park, Mich. Space No. 1243.

Use postpaid card. Circle No. 672




Equipto custom designed
BENCHES
at assembly line prices

264 Models in stock

Equipto's complete line of modern flow Benches give you an unlimited choice of units. They can be used singly or arranged into one continuous streamlined assembly. Available with many types and styles of drawers, drawer pedestals, cabinet pedestals, sliding doors, aerial shelves, and a choice of 4 different tops.

Each drawer is a vault unto itself . . . cannot be pilfered by removing drawer above. All drawers ride quietly on four trouble-free nylon rollers. Write for free catalog No. 200 illustrating and describing this outstanding line of top quality benches.



Division of
Aurora Equipment Co.
607 Prairie Avenue
Aurora, Illinois

Steel Shelving . . . Parts Bins . . . Drawer Units . . . Lockers . . .
Carts . . . Work Benches

MONEY-SAVING COMBINATION FOR ANY MACHINE SHOP



CARMET TOOL HOLDERS AND INDEXABLE INSERTS

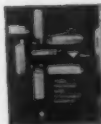
To help you get every advantage from carbide cutting tools—high production, operating efficiency and economy—Carmet offers a full line of improved-design tool holders—over 115 styles and sizes to choose from in both positive and negative rake.

And Carmet Indexable inserts are available in more than 20 styles and sizes and in six different carbide grades—each insert permanently marked for positive grade identification—to give you top cutting performance.

Carmet tool holders and Indexable inserts make machining with carbides practical for any size plant. Match a Carmet tool to your requirements—or let Carmet give you engineering assistance in setting up a complete tooling program—and watch your production climb as costs go down. Inquire today.

• **Allegheny Ludlum Steel Corporation,**
Carmet Division, Detroit 20, Mich.

Write for this **NEW CATALOG**
CARMET TOOL HOLDERS
and **INDEXABLE INSERTS**



Expanded to 16 pages, this latest edition contains specifications of Carmet tool holders and Indexable inserts, replacement parts for tool holders, and information on choosing the proper carbide grade for the job.

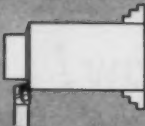
ADDRESS DEPT. MB-2

MATCH THE TOOL TO THE JOB

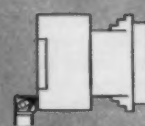
STYLE TATR COUNTERBORING



STYLE SBTR
HEAVY-DUTY TURNING



STYLE TFTR FACING



STYLE TGTR FACING



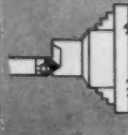
STYLE SFTF
FACING



STYLE SET
CHAMFERING



STYLE TDTF
CHAMFERING



WOW 0002

For all your **CARBIDE** needs, call
ALLEGHENY LUDLUM

Branch offices and distributors in all principal cities





STANDARD TYPES
SLEEVES
AND
SOCKETS

Now!
HEAT TREATED...

So popular with users.

COLLIS Heat Treated Sleeves and Sockets are manufactured by skilled workmen to give long durable service and extra long life. This type of sleeve has less chance of nicks and assures same accuracy with longer runs.

Call at once for our representative to explain about the Complete Collis Line of Lathe centers, Arbors, Drill Drifts, and Magic Type Chucks as well as Sleeves and Sockets and Collets.

"Call Collis for Service"

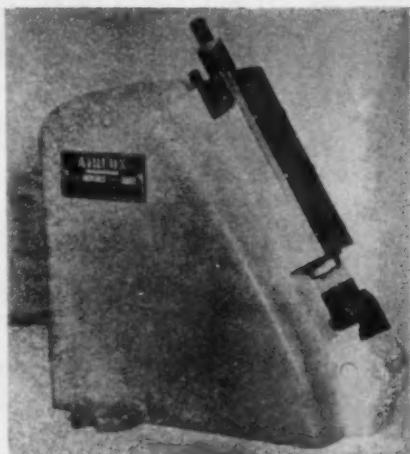
THE COLLIS CO.

DEPT. A, CLINTON, IOWA

Use postpaid card. Circle No. 399

ASTE EXPOSITION . . .

Crimpers



AIRLO PNEUMATIC CRIMPER was primarily designed to crimp solderless electric terminals, such as A-B-C Stakon die sizes or equivalent. It has also found use as a special type of 2 ton press, and for staking operations. Standard controls include a foot valve for manual operation. **Production Devices Inc., Whitehall, N.Y. Space No. 1363.**

Use postpaid card. Circle No. 673



SPELLMACO "SPOTTERS"

A matched set of transfer punches for toolmakers, machinists & tool cribs

Used for transferring location of threaded, drilled and reamed holes, slugs, blanks, etc.

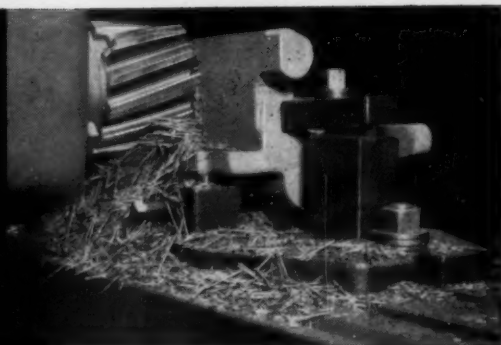
Precision made of finest tool steel—Carefully heat treated and tempered for long life—.0025 undersize to facilitate use—Black oxide finish

Set #3-17. 28 punches with indexed stand—sizes 3/32" to 1/2", by 1/64"—plus handy 17/32" size. Length 4 7/8" **ONLY \$17.00**
Single sizes available

R. L. SPELLMAN CO. - URBANA, OHIO

Use postpaid card. Circle No. 400

Cutter Design Pays off in Chip Size ... Shape!



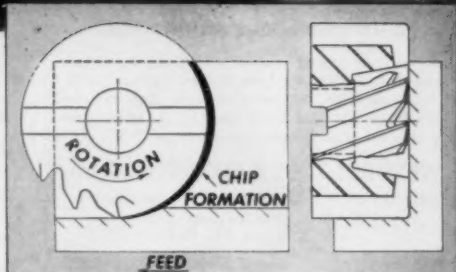
Mill 2 surfaces ... with 1 High Speed Steel Cutter

You can often save time and money by machining two surfaces at once with one shell end mill. But this milling economy is impossible without an accurate, rigid cutter capable of producing a good finish on both work surfaces.

A correctly designed cutter will make the long continuous chip shown here, giving a cooler running cutter and a superior surface finish. Brown & Sharpe Shell End Mills are PRODUCTIONEERED with correct rake angles and precision ground chamfered edges—for smoother chip flow, longer cutter life.


Don't let "almost-as-good" high speed steel cutters steal your milling profits! For top performance, economy and reliability, always specify Brown & Sharpe PRODUCTIONEERED Cutters.

**Write—Cutting Tool Div.: Brown & Sharpe Mfg. Co.
Providence, R. I., for Cutting Tool Catalogs.**



In shell milling, the chip is thin where tooth enters, and thickest where tooth leaves the work. Cutter is designed to roll chips produced parallel to axis of cutter.



PROGRESS IN PRECISION  FOR 125 YEARS

Brown & Sharpe

CUTTING TOOL DIVISION

NELCO CARBIDE TOOLS  HIGH SPEED STEEL CUTTERS

PRECISION TOOLS AND GAGES
MACHINE TOOL ACCESSORIES

MILLING GRINDING AND SCREW MACHINES
GEAR VANE AND CENTRIFUGAL PUMPS

PORTING TOOLS

Available from Stock



**Combines 5 Operations In One
AND 10050—MS-35514—MS-35515**

A complete line of combination ream, counterbore and facing tools to form AND-10050 standards. Tube size 2 thru 32 carried in stock. Also tools for MS-83514 and MS-35515 carried in stock sizes 2 thru 20. Special tools made to order.

WETMORE TOOL & ENGINEERING CO.

Engineers Designers Manufacturers
5316 E. Washington Blvd.
Los Angeles 22, Calif.
AN 9-7266

Use postpaid card. Circle No. 402

Centricator

will solve intricate truing problems on Jig Borers, Milling Machines and Toolroom applications.



more accurately —
more speedily —
and economically

because DIAL GAGE does NOT revolve with tracer.

Fully Universal in range and equipment.

Optional reading in .0005" or .0001".

Request detailed literature.

OPTO-METRIC TOOLS, INC.

137 & 1/2 VARICK STREET, NEW YORK 13.

Use postpaid card. Circle No. 403

ASTE EXPOSITION . . .

Cutting Fluids

CHIP DEVELOPMENT TEST... PLANER OPERATION



HEAT-LIMITING CUTTING FLUIDS

perform a dual role as cutting fluid agents, speeding metal removal in production machining, tapping, planing, shaping, and milling operations while retarding tool wear. The materials are described as solubilized condensates of sulphur, chlorine, sperm oil and heavy-duty, high-flash paraffin oils. They are said to have unusual lubricity, outstanding anti-weld characteristics, and resistance to the high heat of extreme pressures. **United Tool Co., Huntington, Ind. Space No. 1220.**

Use postpaid card. Circle No. 674

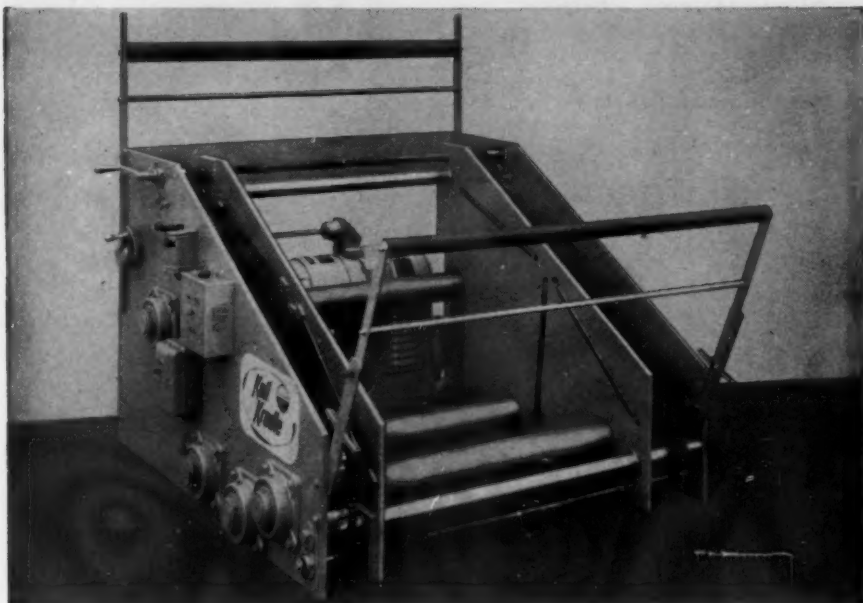
Cylinders, air & hydraulic

ALL TEFLON SEAL CYLINDERS embody the Shef Seal design—both the "Job-Rated" line, which has ratings of from 1,500 P.S.I. (under severe operating conditions) to 2,500 P.S.I. (for moderate operating conditions), and the "Power-Packed" line with its increased ratings of 3,000 to 5,000 P.S.I. The term Shef Seal was chosen because of the seal's proof against shearing, heat, extrusion, and fluid. The company stresses that it can withstand operation temperatures from a -100 F. to 500 F. **Miller Fluid Power Div., Flick-Reedy Corp., Melrose Park, Ill. Space No. 1625.**

Use postpaid card. Circle No. 675

NEW 7000 lb. *Koal-Kradle*

feeds 40" stock from 42" rolls



benchmaster now supplies all KOIL-KRADLE requirements, standard or special, from $\frac{1}{2}$ ton to 8 tons capacity.

OPERATES INTERMITTENTLY using Vari-loop Control to sustain a slack loop from which any machine can draw.

DUAL GUIDE PLATES quickly adjust for any stock width up to 40".

OPERATES CONTINUOUSLY at any constant speed within range of variable-speed driving unit.

ALL ROLLS HARDENED. Power driven rolls mounted in self-aligning bearings.

There's only one KOIL KRADLE! Write for quotations on your coil-feeding requirements.

1835 West Rosecrans Avenue
Gardena, California

benchmaster

World's largest
manufacturer of small punch
presses and mills.

ASTE EXPOSITION . . .

VERI-TROL HYDRAULIC CHECKING CYLINDERS, used with the proper air cylinder, offer smooth, uniform controlled stroke speed essential to tool or work piece feed on drilling, milling, cut-off, grinding, and similar machine operations. Maximum checking capacity is 2,000 lbs. on the out stroke, with free return. Models are available with 2", 4", 6", 9", 12", 15", and 18" inch check-



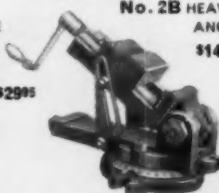
ing stroke lengths. **Modernair Corp., San Leandro, Calif. Space No. 1158.**

Use postpaid card. Circle No. 678



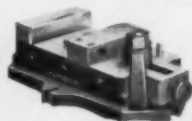
No. 55
ALL ANGLE
VISE

\$2995



No. 2B HEAVY DUTY
ANGLE VISE

\$14995



No. 44
PRODUCTION VISE

\$9995

PALMGREN

127

Vises, Rotary Tables, Milling Attachments can speed up production, solve difficult angle jobs.

Used In All Industries... Everywhere



No. 60B
SWIVEL MACHINE VISE \$9995

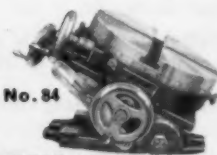


No. 246
ANGLE PLATE \$1595



No. 14
DRILL PRESS VISE \$1995

Get this **FREE Catalog NOW** on work holding tools, showing 68 models and types of Palmgren vises, rotary tables, milling attachments and other machine tool accessories, with jaw sizes from 1½" to 8" showing details and prices.



No. 84
TILTING, INDEXING
and ROTARY TABLE \$13950

CHICAGO TOOL & ENGINEERING CO.
8384 South Chicago Ave., Chicago 17, Illinois

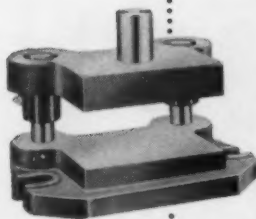
Use Postpaid card. Circle No. 406

To assure
absolute
alignment
of
leader
pins
and
bushings



They're assembled on
cylinder square fixtures

DANNEMAN
PRECISION
DIE SETS



The inherent precision of Danneman die set design and manufacture allows Danneman customers to concentrate on the *larger* task—the die itself. For example, they like the flanges all around that give extra strength and additional clamping area. They recognize the importance of complete interchangeability between any die shoe or punch holder—which Danneman achieves by precision boring on master plates with Moore jig-boring machines and De Vlieg microboring tools.

Customers also like the fact that in Danneman die sets the die space is in even inch increments with the shank located on the center of the die area—that hardened and ground leader pins are spaced for maximum stability and still allow blanks to fall through when in an inclined position.

Next time, specify the Danneman precision die set available for your purpose and extra convenience—or we'll design and build to your specs. Complete catalog on request.

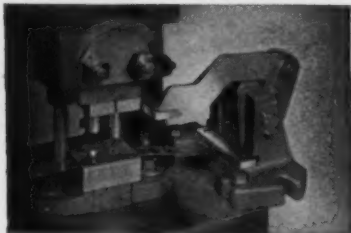
DANNEMAN
DIE SET DIVISION

ACME-DANNEMAN CO., INC.

Sales Offices: 45 West 18th St., New York 11, N. Y.

ALgonquin 5-7150 Works: 203 Lafayette St., New York 11, N. Y.

**economically priced
press room equipment**



DURANT Ram Scrap Choppers

Operated by press ram, independent of the die.
Tool steel blades. Easily installed in any position
only two bolts necessary.

Model	Width	Maximum Stock Thickness	Price
M 1	3"	.062	60.
M 2	6"	.062	95.
M 3	10"	.100	165.
M 4	12"	.100	195.
M 5	16"	.100	250.

WRITE FOR NEW FREE CATALOG
DURANT TOOL SUPPLY Co.
PROVIDENCE 3, RHODE ISLAND

Use postpaid card. Circle No. 408

THE FOREMOST

GERMAN INDUSTRIAL FAIR

DEUTSCHE INDUSTRIE-MESSE

FERIA INDUSTRIAL

德國工業博覽會

PAMERAN INDUSTRI DIJE

**COME TO THE
HANOVER FAIR**

APRIL 27 to MAY 6

THE BIGGEST AND BEST EVER!

4,000 German and foreign manufacturers—
seven million square feet of opportunities for
new contacts—new profitable business in

Machinery • Industrial Equipment •
Tools and Instruments • Iron and Steel
• Shipbuilding • Electrical Engineering
• Chemicals • Rubber and Plastics •
Office Equipment •

For free fact-filled pamphlet, room reservations, official
admission tickets, contact



German-American
Trade Promotion Office

350 Fifth Ave., New York 1, N.Y.

Wisconsin 7-0727

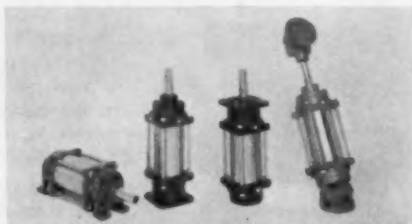
Use postpaid card. Circle No. 409

ASTE EXPOSITION . . .



ALUMINUM BODY AIR CYLINDER
was designed and built for spindle
speeds up to 7000 rpm. Air seals used
in the improved air swivel connection
enable the pressure to be held without
variation or leakage. Simplicity of con-
struction, light weight, ample sized
ports permitting rapid piston movement
are claimed to result in trouble-free
service even under the heaviest of
recommended loads. **The Cushman
Chuck Co., Hartford, Conn., Space No.
1439.**

Use postpaid card. Circle No. 679



DOUBLE-ACTING AIR CYLINDERS
with bores 1½", 2½", 3¼", and 4" will
be featured. These cylinders are of much
heavier construction and more accurate
design than the manufacturer had pre-
viously produced, according to his
announcement. **Mead Specialties Co.,
Chicago, Ill. Space No. 1302.**

Use postpaid card. Circle No. 680



- *Higher Cutting Speeds*
- *Lower Production Costs*



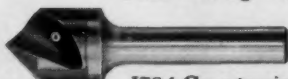
NEW



SOLID

J015 Boring Tool

CARBIDE



CUTTING

J704 Countersink

TOOLS



J564-R Reamer

The New "Drillspeeder"

The Jarvis Drillspeeder converts your ordinary drill press into a high speed drilling machine! This new precision attachment features a 4 to 1 gear ratio, is adaptable to any conventional style of drill press spindle.

Maximum speed of 30,000 RPM is ideal for high speed drilling of small holes . . . permits effective use of solid carbide drills and reamers. Chuck capacity range from No. 80 to $\frac{1}{2}$ " shanks.

*Visit our Booth No. 1417
at the ASTE Show*

Lower your production costs with Jarvis solid carbide cutting tools! These rugged carbide tools let you use optimum speeds and feeds . . . stay sharp and accurate longer between grinds.

The tools shown above are only a few of the many new standard items just added to the Jarvis line of cutting tools. Jarvis makes a complete selection of solid carbide drills, end mills, reamers and rotary files.

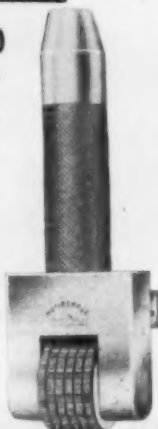


NUMBERALL

WITH THE COST OF STAMPING NUMBERS

NEW MODEL 70 MULTI-WHEEL NUMBERING MACHINE

The most efficient method of stamping numbers into metal. Model 70 NUMBER-ALL machines are used in all industries to mark various parts. Shank for HAND or PRESS. 3 to 20 wheels. 1/32" to 3/4" high figures. Write for Bulletins BB70, BB80, BB83, and BB85.



NUMBERALL STAMP & TOOL CO.
HUGUENOT PARK STATEN ISLAND 12, N. Y.

Use postpaid card. Circle No. 411

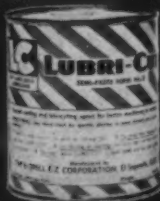
New

LUBRI-CUT #3
(in bulk form)
for hard and
gummy materials.

- zirconium
- titanium
- molybdenum
- A-286
- Hi-tul
- and others

Write for full
details.

FOR ALL MODERN
MACHINE TOOLS
LUBRI-CUT
A SPECIAL CUTTING
COMPOUND



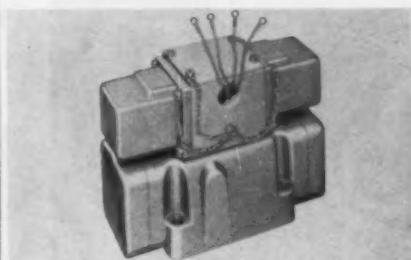
TAP & DRILL E-Z CORP.
A Division of Darco
Industries, Inc.
2151 E. Rosecrans Ave.
El Segundo, Calif.



Lubri-Cut
Tap & Drill Lubricant

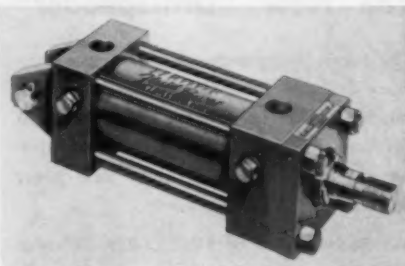
Use postpaid card. Circle No. 412

ASTE EXPOSITION . . .



PNEUMATIC AND HYDRAULIC CYLINDERS, known as the 50,000 series, will be displayed at the exhibit. Some of the features are extra heavy steel covers, long rod bearings, cushioning arrangement, and protective finish. The self locking drawbar, to be featured also, will stress safety. It is used in conjunction with power chucks, mandrels, and collets. Other items to be shown will be the Logansquare air cylinder, Rotocast and Supermatic hydraulic cylinders, air valves, hydraulic valves, etc. Pictured is the 9700 series, 3000 lb. hydraulic valve. **Logansport Machine Co., Inc., Logansport, Ind. Space No. 1652.**

Use postpaid card. Circle No. 681



POWRDRAULIC CYLINDER. Rated at 2000 psi shock and 3000 psi nonshock hydraulic pressures with a high safety factor, this new hydraulic cylinder line will have the advantage of interchangeability with other cylinders. **Hanna Engineering Works, Chicago, Ill. Space No. 713.**

Use postpaid card. Circle No. 682

MACHINE and TOOL BLUE BOOK

NEW XTRA-SAFE

MODERN-MAGIC CHUCKS & COLLETS

These, "the original", Modern-Magic chucks, still contain a solid, one-piece body and shank construction. And now, live-spindle tool changes are made even more foolproof, through the addition of these new extra-safe features. Take a look.

EXTRA WIDE, NO-PINCH LOCKING RING

The new flanged top on the locking ring protects hands from contact with the upper retainer spring and spindle. And its extra width assures that the lower retainer spring will always be covered, regardless of position. No pinched hands!

PROTECTED, WIDE FLANGED COLLETS

Guard against injury when handling collets with greasy hands. You can't drop them, and hands won't ride up into the chuck.

make live-spindle tool changes "on-the-run" - safely!



BOOTH NO. 1504

THREAD TOOL DIVISION
JONES & LAMSON

JONES & LAMSON MACHINE COMPANY, 520 Clinton St., Springfield, Vt., U. S. A.



Use postpaid card. Circle No. 413

KEYWAYS

— ACCURATE and
UNIFORM with
The GLENNY
Adjustable Expansion
PUSH BROACH

because . . .

this sturdy simple tool can be used on any type arbor press for continuous efficient keyways — in any quantity

**COSTS OFTEN REDUCED
AS MUCH AS 10 TIMES**

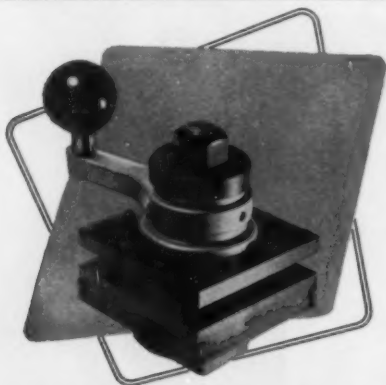
SEND FOR
BULLETIN

DEALER
INQUIRIES
INVITED

**THE EAST SHORE
MACHINE PROD. CO.**

54 East 201st St.
CLEVELAND 23, OHIO

Use postpaid card. Circle No. 414



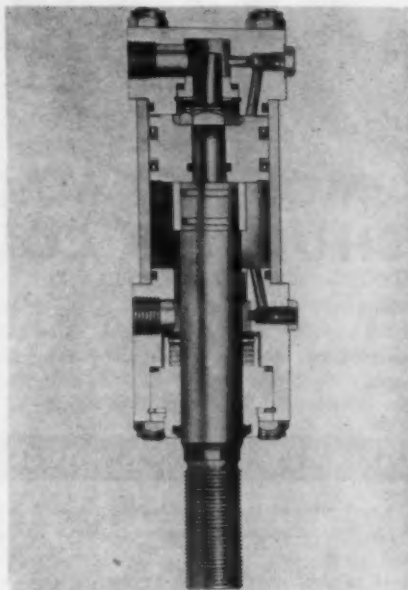
A 4 position automatic indexing tool—**RIGID-ACCURATE-COMPACT**. Built to most exacting requirements. Parts are of alloy or tool steel, heat treated and ground to closest working tolerances. Available for 12", 14" and 16" machines. Write for complete details and illustrated folder.

designed & fabricated by
WESTWOOD ENGINEERING COMPANY
2224 PURDUE AVE., LOS ANGELES 54, CALIF.

Use postpaid card. Circle No. 415

282

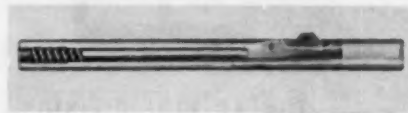
ASTE EXPOSITION . . .



O-M AUTOMATION CYLINDERS. The "Automation" lines of air and hydraulic cylinders are designed specifically to the latest automotive industry automation standards. They are versatile and fabricated to give maximum efficiency and long life. **Ortman-Miller Machine Co., Inc., Hammond, Ind. Space No. 612.**

Use postpaid card. Circle No. 683

Deburring Equipment



BURRAWAY TOOL easily removes burrs, fins and other hole irregularities. Its simple, compact design makes it easy for the unskilled operator to use. Tool can remove burrs on both the top and bottom of a hole from one side,

MACHINE and TOOL BLUE BOOK

thus eliminating the necessity of reversing the part. Good results are being obtained using these tools in multiple spindle machines, thus eliminating a hand operation or secondary operation. A cutter blade is retained in a slot in the body of the tool. A spring-loaded plunger holds the cutter blade in the open ready-to-cut position. The front or rear angle of the cutter blade will not function until it contacts either the

top or bottom edge of a hole. When the feed cutting load exceeds the pre-set spring pressure, the blade continues to collapse under feed until it stops cutting. The edges on the top of the cutter blade being rounded, there is no serious injury to the finished hole surfaces. No burrs remain in the hole to interfere with assembly of component parts. **Cogsdill Tool Products, Inc., Oak Park, Mich. Space No. 1243.**

Use postpaid card. Circle No. 684

Air-Cooled Lighting by Dazor at Low Cost

Adjustable-Arm Models



Light up machines and benches at rock-bottom cost and get Dazor dependability besides. New Adjustable-Arm Lamps mount solidly, hold fast in any position set. Either top- or side-mounted reflector. Air-cooled housing is safe to handle despite continuous use. Gray baked enamel over bonderizing. Call your Dazor distributor. Dazor Manufacturing Corp., St. Louis 10, Missouri.

...Makers of

DAZOR FLOATING LAMPS

Use postpaid card. Circle No. 416

SHARP NAMEPLATE MARKING

Model
No. 4



The nameplate on your product is your signature. Keep it neat and legible! Accurate location and alignment are assured with this

NAMEPLATE DETAIL PRESS

- Simple Operation
- Perfect Alignment
- Uniform Depth

GEO. T. SCHMIDT, INC.
1802 W. BELLE PLAINE AVE.
CHICAGO • 13 • ILLINOIS

Use postpaid card. Circle No. 417

FLYNN BORING HEADS



**LEADING NAME IN
BORING HEADS FOR 40 YEARS**
19 MODELS Write for catalog

FLYNN MANUFACTURING CO.
133 FLOWERDALE AVE. • DETROIT 20, MICH.

Use postpaid card. Circle No. 418

ASTE EXPOSITION . . .

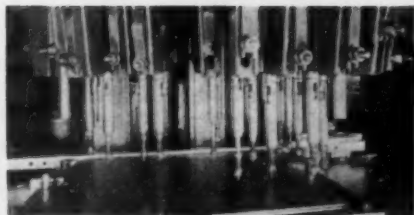


ROTO-EDGE CUTTER, for deburring or trimming sharp or uneven edges from workpieces and castings, eliminates hand filing, sanding, or grinding in the fabrication of metals, plastics, hard rubber, compositions, and laminates in sheet, bar, block or other straight-edge forms. The new machine is powered by compressed air from any pressure source of approximately 25 psi. The workpiece is hand-held against two right-angled fences which are spaced to allow one edge of the material to project into the path of the cutting disc. Pressure on the foot pedal causes a rapid eight-inch downward stroke of the cutter head and disc, which cleanly planes off the projecting edge; release of the pedal returns the cutter head to normal position. Edge lengths up to 16 inches can be trimmed by reversing the workpiece after the first eight-inch pass. Stroke and return speed are hand-adjustable by means of a valve mounted on the foot-pedal housing. AMF Tool Division, Bloomfield, N.J. Space No. 1164.

Use postpaid card. Circle No. 685

MACHINE and TOOL BLUE BOOK

BURR-BIT automatically de-burrs tapped holes. It de-burrs and taps at the same time. The tool was designed to fit all makes of two and four fluted taps and to be used either by friction type tapping heads or lead screw tappers on both single and multiple units. It is made of the finest grade high speed tool steel, and designed for use on steel, cast iron, aluminum, etc. Tool is pictured in operation at a manufacturing



plant. **Vernon Devices, Inc., Mount Vernon, N.Y. Space No. 1909.**

Use postpaid card. Circle No. 686

**USED BY
INDUSTRIAL
LEADERS**

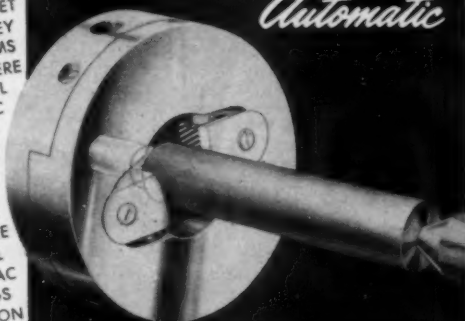
LUFKIN FOUNDRY
GENERAL ELECTRIC
JOHNSON MOTORS
FAIRMONT STEEL
ALCO CHEVROLET
PRATT & WHITNEY
REMINGTON ARMS
FORD JOHN DEERE
BETHLEHEM STEEL
LELAND ELECTRIC
INGERSOL RAND
J. I. CASE CO.
RHEIM MOTORS
WESTINGHOUSE
INTERNATIONAL
CUMMINS ENGINE
DETROIT DIESEL
BENDIX PONTIAC
HYATT BEARINGS
CADILLAC ALLISON
CHRYSLER NORTON
LANDIS TOOL
LODGE & SHIPLEY
WAUKESHA MOTORS
SARGEANT & CO.
CHELSEA PRODUCTS
MASTER ELECTRIC
NEW PROCESS GEAR
DANA MONARCH
GOULD PUMP



**SENECA
FALLS
MACHINE**

SENECA FALLS

Automatic



WORK DRIVER

DRIVES ANYTHING BETWEEN CENTERS

NEW JAWS with angular serrations . . .
SELF-ADJUSTING to work eccentricity . . .
PREVENTS strain on head center . . .
SAFER—no projecting parts to injure operator . . .
FASTER—saves time, one operator can attend several machines. Models for all machines. Sizes for 1/4" to 6 7/8" work diameter; Priced from \$81. Write for Bulletin D-57 for complete information.

BETTER TOOLING SINCE 1864

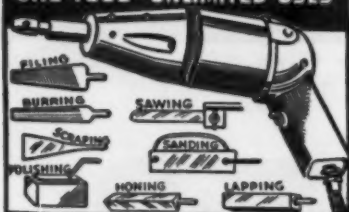
SENECA FALLS MACHINE CO.

Seneca Falls, N. Y.

B-R-E-A-K...

Hand Finishing Bottlenecks
with Portable • Electric
Reciprocating Tools

ONE TOOL - UNLIMITED USES



These handy tools will cut out many tedious hand filing and finishing operations—Increase Production—Produce Uniform Work.

Light in Weight—Delivers $\frac{1}{8}$ " or $\frac{3}{8}$ " fixed stroke at 1000 strokes per minute—Operates on 110 volts AC or DC.

ACME TOOL CORP.

71 WEST BROADWAY NEW YORK 7, N.Y.

Use postpaid card. Circle No. 420

ASTE EXPOSITION . . .

Diamond Reclamation Equipment



DIAMOND COLLECTOR is designed for installation in either a central collecting system or with unit-type sys-

B.S.A. CHUCKS

Medium Duty • Precision Made in England



MODEL 588
Self-centering
Geared Scroll
UNIVERSAL
Three Jaws

Includes 1 Set Ex-
ternal Jaws, 1 Key,
1 Set Internal Jaws,
3 Pinions, 3 Bolts

SIZE IN.	IMMEDIATE DELIVERY		PRICE
	WEIGHT (lbs.)	CHUCK BORE	
3"	3 1/4	3/8"	\$ 35.75
4"	8	1"	35.75
5"	12	1 1/4"	41.50
6"	17 1/2	1-9/16"	48.00
7 1/2"	29	2"	56.50
9"	42	2 1/2"	71.50
10 1/2"	62	3"	85.50
12"	88	3 3/4"	120.00
15"	143	3 1/2"	180.00
18"	200	4"	261.00
21"	262	4 1/2"	320.00
24"	324	4 1/2"	390.00



MODEL 550
4-JAW INDE-
PENDENT
CHUCK

Includes 4 operating
screws, 4 Reversible
Jaws, 4 Bolts, 1 Key

SIZE IN.	WEIGHT (lbs.)	CHUCK BORE	PRICE
4 1/2"	8	1"	\$ 30.50
6"	16	1-9/16"	35.00
8"	34	1 3/4"	51.00
10"	60	2"	62.50
12"	80	2 1/4"	74.50
14"	98	2 3/4"	84.00
16"	126	3"	105.00
18"	166	4"	140.00
20"	204	4"	165.00
22"	246	5"	205.00
24"	322	5"	225.00
30"	480	5 1/2"	348.00

Order Today

Dept. A, 251 Centre St.
New York 13, N.Y. Canal 6-5575

VICTOR MACHINERY EXCHANGE, INC.
Dealers in Tool Room Equipment

Use postpaid card. Circle No. 421

tems, and is adaptable to any type of diamond-wheel grinding, whether mist, wick, or dry grinding. An average of 30% of carats is said to be recovered from the swarf. The diamond-bearing dust is caught in a clear Plexiglas container where it can be visually inspected. The efficient centrifugal principle on which the collector operates eliminates filters, oil baths, and inflam-

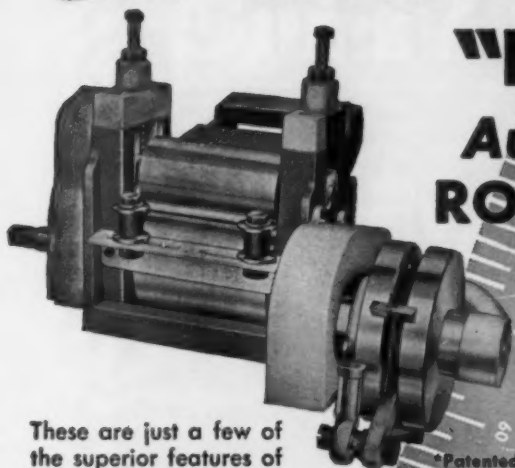
mable materials. **Torit Manufacturing Co., St. Paul, Minn. Space No. 1349.**

Use postpaid card. Circle No. 687

Diamonds, industrial

ALL PHASES OF INDUSTRIAL DIAMOND'S contribution to tooling for competition within industry and the nation will be featured, with a million dollar diamond display, in run-of-mine

Even Without Pilots or Finger Stops



These are just a few of the superior features of "RFC" Automatic Roll Feeds. There are many other wanted features designed to increase precision production. Write for our new illustrated brochure.

"R F C" Automatic ROLL FEEDS

**Control
Feeding
To Utmost
Accuracy!**

- No Ratchet or Pawls To Wear Down
- Can't Slip—Each Wedge Has 4 Points of Contact
- One Piece Shaft and Roll Ground From Solid Bar To Maintain Perfect Alignment



Roll Feeds Corp.

ASHTON, R. I.

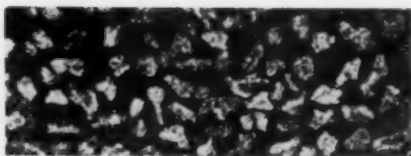
MANUFACTURER OF QUALITY FEEDS FOR POWER PRESSES

ASTE EXPOSITION . . .

production. Diamond dressing and truing tools, grinding wheels and hones, saws, boring and turning tools, also shown. **Industrial Diamond Association of America, Inc., Pompton Plains, N.J. Space No. 1840.**

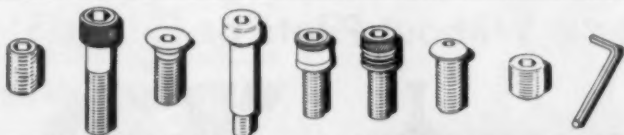
Use postpaid card. Circle No. 688

MAN-MADE INDUSTRIAL DIAMONDS under a microscope possess real beauty. They are used in the sharpening of carbide cutting tools for the



machining of parts of aircraft, shells, guns, tanks, missiles, and automobiles. **Metallurgical Products Dept., General Electric Co., Detroit, Mich. Space No. 1435.**

Use postpaid card. Circle No. 689



Why We Sell Through Distributors!



MEMBER ASMEA

Blue Devil SOCKET SCREW PRODUCTS

"SOLD ONLY THROUGH AUTHORIZED INDUSTRIAL DISTRIBUTORS" means that close by are complete Blue Devil stocks for immediate delivery plus experienced personnel to advise you.

WRITE TODAY for complete information and name of your nearest Blue Devil distributor.

SAFETY SOCKET SCREW COMPANY

6512 North Avondale Avenue • Chicago 31, Illinois

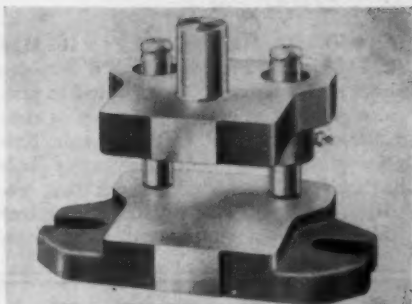
Warehouses at: Chicago, Los Angeles, San Francisco, Detroit, New Haven, New York City

Use postpaid card. Circle No. 423

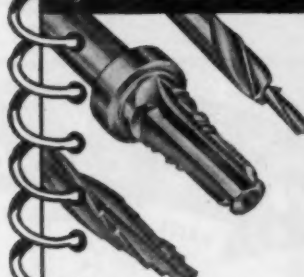
Die Sets

IMPROVED QWIK-FIT DIE SETS feature Qwik-Fit guide pins that simplify die set disassembly and reassembly. A spherical-angular radius on each pin claims to make it impossible for the die set to cock or jam. The die sets also feature greatly improved bushings, which have double figure eight oil grooves fed by grease fittings. The **Producto Machine Co., Bridgeport, Conn. Space No. 1500.**

Use postpaid card. Circle No. 690



Spiral SPECIAL CUTTING Tools



They cut costs
because they cut
operations...
75% or more!

Custom-designed and precision-made exactly to fit your needs. Spiral Tools boost output and quality. Ask for details.

SHARPEN END MILLS

*Quickly, Completely,
IN YOUR OWN SHOP*

For grinding or milling of any spiral lead. Pays for itself in a hurry. Send for facts today.



**Super MULTI-SPIRAL
END MILL GRINDING FIXTURE**

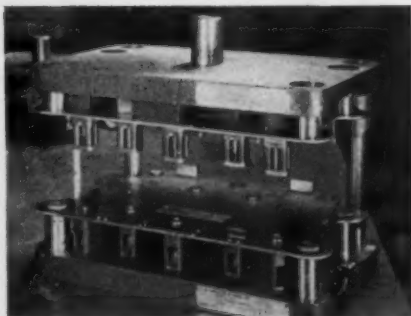
SPIRAL
STEP TOOL COMPANY

Designers and Manufacturers of
All Types of Special Cutting Tools
5400 N. Damen Ave. • Chicago 25, Ill.
Phone: Longbeach 1-5384

Use postpaid card. Circle No. 424

ASTE EXPOSITION . . .

MAGNETIC PERFORATING DIE EQUIPMENT, making use of pre-tooled sheet metal templets, is reported to produce parts with all the accuracy of conventional dies, while at the same time permitting easy change-over of hole patterns in a matter of minutes, re-using punches, die bushings, retainer units, etc., by simply inserting these



CAMS

**To Your Specifications
except Screw Machine Cams**

Design Assistance Offered

KIDDE PRECISION TOOL CORP.
25 LOCUST AVE. ROSELAND, N.J.

Use postpaid card. Circle No. 425

parts in a different set of templets. It is made up of a basic die set having templet support posts permanently mounted and made of a special alloy for impact resistance and high magnetic attraction. This equipment can be used in almost any press having a shut height of 9½" or more. Pictured is typical die with die parts and templets mounted, ready for production. S. B. Whistler & Sons, Inc., Buffalo, N.Y. Space No. 1525.

Use postpaid card. Circle No. 001



FREE

NEW-16 PAGE CATALOG

WRITE FOR YOUR COPY TODAY

★

JIG AND FIXTURE COMPONENTS

<ul style="list-style-type: none"> Latch Bolts Cast Iron Hand Knobs Aluminum Hand Knobs Quarter Turn Screws Shoulder Screws 	<ul style="list-style-type: none"> Jig Feet (3 Types) Spherical Washers Fixture Keys Knurled Head Screws Toggle Shoe Clamps & V-Pads
--	---

HOLD DOWN AND CLAMPING TOOLS

<ul style="list-style-type: none"> T-Nut & Stud Sets Step Block & Clamp Sets Flanged Nuts Cut Thread Studs 	<ul style="list-style-type: none"> Toe Nuts Coupling Nuts Adjustable Step Blocks Strap Clamps (Plain & Step Type)
--	---

CATALOG INCLUDES TRACING TEMPLATES



**118 HOLLIER AVE.,
DAYTON 3, OHIO**



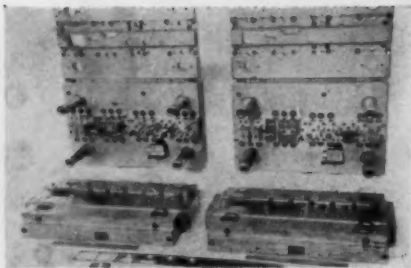
Use postpaid card. Circle No. 426

MACHINE and TOOL BLUE BOOK

Dies

PRECISION CARBIDE LAMINATION DIES. Pictured are two identical carbide dies. All the carbide parts are guaranteed interchangeable. Even the fully-guided strippers can be completely interchanged from one die to the other. Oberg Manufacturing Co., Inc., Tarentum, Pa. Space No. 1771.

Use postpaid card. Circle No. 692



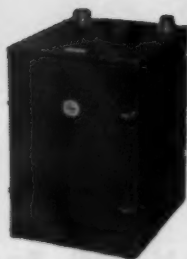
how to trap dust

*that damages
your machines
and hurts
company morale*

Easy to move

TORIT

dust collectors trap dust
at its source!

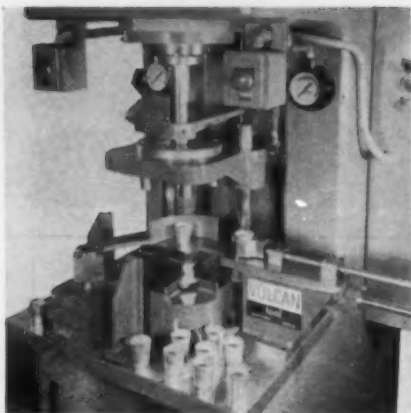


Untrapped dust costs money: "secretly" forces precision machines out of line, limits production. Torit dust collectors are unitized for custom installation—save more money, usually more efficient than central (built-into-building) system. Torit unit operates only when machine or combination of machines it protects are on. Filtered air may be returned to room to save heat. Many models and sizes, all self-contained, easy to move. Write today to . . .

TORIT
manufacturing co.

Dept. 603, 311 Walnut Street, St. Paul 2, Minn.

ASTE EXPOSITION . . .



BREHM SHIMMY DIE, complete with an automatic loading and unloading arrangement, will be in operation in a hydraulic press at the exhibit. The manufacturer will be trimming and giving

away aluminum "jiggers." Brehm dies trim a variety of parts quickly and accurately with the same type edge, free from burrs, as obtained with ordinary blanking dies. Metal thicknesses worked on vary from .005 brass to .218 steel. Many operations are eliminated because the die trims complete in one press stroke. Parts trimmed have a clean, flat edge. **Vulcan Tool Co., Dayton, Ohio. Space No. 1404.**

Use postpaid card. Circle No. 693



BLANKING AND PERFORATING DIE, composed of Uddeholm's standard, water-hardening (W-1) H and J tool steel sections, will be exhibited. In this die, Uddeholm special sections replaced rectangular tool steel bars $2\frac{1}{2}$ " x $3\frac{1}{2}$ "

TIME SAVERS for the Tool Room

. . . and the production line

Do It Faster With A DREMEL MOTO-TOOL

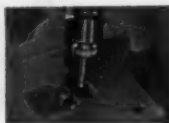
For top-speed, top-precision grinding, polishing, and burring, low-cost Dremel Moto-Tools are your best practical buy. Use them in tool and die work, pattern making, burring operations, and dozens of other applications. They're light and easy to handle. Give you quick access to areas inaccessible for larger grinders. Cool-running universal motor develops 27,000 RPM. Smooth operation permits precision accuracy in close-tolerance work, eliminating costly and painstaking hand work.

Model No. 2 Moto-Tool only\$19.95

Model No. 2 Moto-Tool Kit, with 23 accessories, including high-speed cutters, in steel storage case\$27.50

See Your Industrial Supply Dealer or Write to
DREMEL MANUFACTURING CO., Dept. 218D, Racine, Wis.

Use postpaid card. Circle No. 428



in cross section. Illustrated is a die showing the number of die steel sections from which it was made. Also illustrated is the blanked part and a single die steel section. Sheet and plate blanked by the die averages $\frac{1}{8}$ " to $\frac{1}{2}$ " thick. Because the manufacturer's steel bars are usually 10-12' long, they afford great flexibility in making die sections to various shapes, lengths, and forms. Uddeholm Company of America, Inc., New York, N.Y. Space No. 330.

Use postpaid card. Circle No. 694



STRETCH DIE, said to have been fabricated in a single working day, will be one of the larger plastic tools on display at the exhibit. Made from Maraset

Cut Costs • Boost Production with **TRIO**



NEW IMPROVED LIVE CENTERS

REPLACEABLE CENTER POINT—Get more work out of every TRIO Live Center by changing **ONLY** the point—male, female, pipe—to fit the job. TRIO Live Centers do more work, last longer.

RUGGEDLY BUILT—Has same precision Timken tapered roller bearings as on heavy-duty machine tool spindles—can absorb extreme thrust and heavy radial loads with minimum wear. Turns with the work regardless how tight it is set.

MORE PRODUCTION—BETTER QUALITY—No vibration, no chatter, heavier cuts at faster speeds with closer tolerances. Precision built with **GUARANTEED OPERATING ACCURACY OF 0.0002 INCH.**

AA-T148

TRIO MACHINE & MFG. CO.
35700 Vine Street • Willoughby, Ohio

Some select territories still available
Use postpaid card. Circle No. 429

ASTE EXPOSITION . . .

epoxy resins, it is used to form aluminum into aircraft parts at the Cessna plant in Wichita. Approximately 54" long and 22" high, its weight is reported to be about 1/3 of a comparable Kirk-site die. The materials costs of the stretch die are said to be approximately 1/6 those of conventional metal-forming

BREMIL
The IMPROVED Compound Lever Shears

ALL ALLOY
FULLY
GUARANTEED

Two Sizes

PORTABLE

No. 1 cuts up to No. 11 gauge strip or sheet.
No. 2 cuts up to 1/4" steel plate.

BREMIL MFG. CO.
1020 Holland Street, Erie, Penna

Use postpaid card. Circle No. 430

Amcor Roller Stock Pushers

FOR POSITIVE STOCK ALIGNMENT

5 IMPORTANT ADVANTAGES

LOW COST — costs only a fraction of hand-made pushers
SIMPLICITY OF INSTALLATION — requires milling of one slot and drilling of one hole
COMPACT — engineered and manufactured for minimum space requirements
ANTI-FRICTION — hardened roller on brass shaft requires minimum effort to insert and feed stock
MINIMUM DIE MAINTENANCE — no refitting necessary when die is sharpened . . . increases pilot life

Write us for complete information

APPLIED MECHANICS CORPORATION

528 Fourth St., N.W., Grand Rapids, Mich.
Telephone Glendale 9-8544

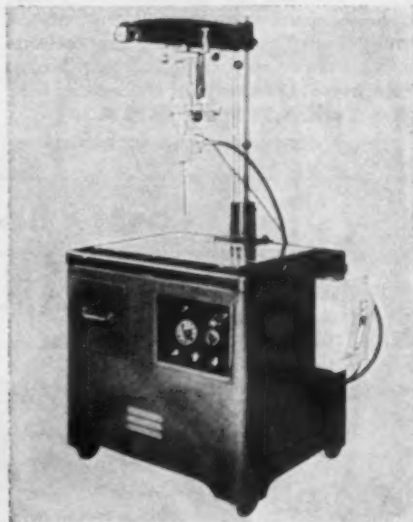
Distributor inquiries invited

Use postpaid card. Circle No. 431

tools. Marblette Corp., Long Island City, N.Y. Space No. 1950.

Use postpaid card. Circle No. 695

Disintegrating Machines



C-1 DISINTEGRATING MACHINE will remove broken taps, drills, reamers, studs, etc., quickly and easily, from .080 up to a 2" dia. It is equipped with gravity automatic feed, and has a 25" x 30" "T" slotted work table. Jiffy Disintegrators, Inc., Royal Oak, Mich. Space No. 2014.

Use postpaid card. Circle No. 696

Drafting Machines

ARISTO COORDINATOGRAPHIC drafting machine is designed for the precision making of charts for comparators and optical profile grinders. Instrument is manufactured in Germany by Dennert & Pape. It features two precision slides fixed at right angles to each other. Bushing is suited for pencil, pen or scribing tools; magnifying glasses can be inserted into the same

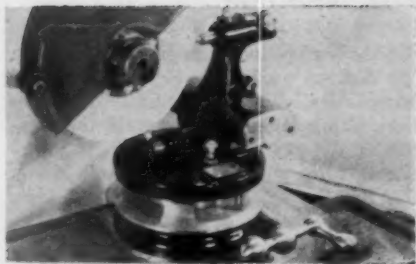
MACHINE and TOOL BLUE BOOK

opaque plastic sheeting. Machine has two magnification scales of 25X and 50X. Plotting accuracy over the whole area is $\pm .002$ ". Eric R. Bachmann Co., Long Island City, N.Y. Space No. 704.

Use postpaid card. Circle No. 697

Dressers

MODEL P-1 AUTOMATIC ANGLE TANGENT TO RADIUS DRESSER. After the dresser is preset to the desired



Compare these features WITH YOUR PRESENT TYPE OF COUNTERBORE



Write for **FREE Catalog**
Arcanum Tool Company
ARCANUM, OHIO • PHONE PHILLIPSBURG 4-4411
Representatives in all principal cities

Use postpaid card. Circle No. 432

ASTE EXPOSITION . . .

profile (composed of angles and radius), the desired profile is said to be dressed automatically in one continuous operation, eliminating any break in the profile at the points of tangency. It is reported fully universal. The newer Model P-2 dresser will also be exhibited. Jeon Manufacturing Co., Washington, D.C. Space No. 2054.

Use postpaid card. Circle No. 606

NEW CONTOUR DRESSING TECHNIQUES. Hydraulic, automatic wheel dressers enable .0002" tolerances on a multiplicity of contours. Among the intricate contour jobs now possible are dressing of grinding wheels for air foil lugs, axle spindles, bearing races, etc. Hoglund Engineering and Mfg. Co., Berkely Heights, N.J. Space No. 1301.

Use postpaid card. Circle No. 609

SAVE TIME AUTOMATING SMALL PARTS ASSEMBLY OPERATIONS

SPECIFY **DIXON** *"Auto-Positioner"*

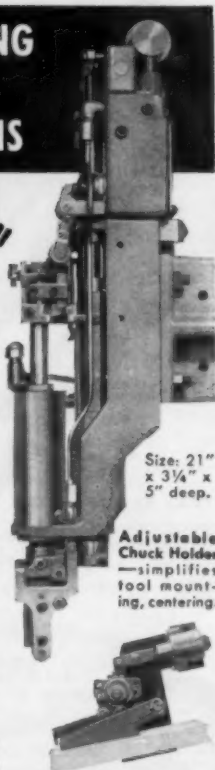
- **STANDARD HEAD DESIGN**—Saves engineering time. Easy to apply to variety of jobs. Operates on ordinary 80# air pressure, 110 volts. Has machined T-slot surface, simple adjustments. Tooling, mounting column, feeders, etc., optional.
- **BUILT-IN SENSING**—Acts as automatic inspector, assures quality production. Machine stops if part is missing or malformed.
- **FAST, VERSATILE**—Handles wide range of feedable metal or plastic parts from 1/4" to 3" O.D. at speeds up to 100 cycles per minute. Easy to tool.
- **PRECISION-BUILT**—Sturdy frame, one-piece super-finished piston and rod, cushioned air cylinder, J.I.C. controls.



WRITE FOR FREE DATA SHEETS—New circulars give complete facts, show typical applications.

DIXON AUTOMATIC TOOL, INC.
2306 - 23rd AVENUE • ROCKFORD, ILLINOIS

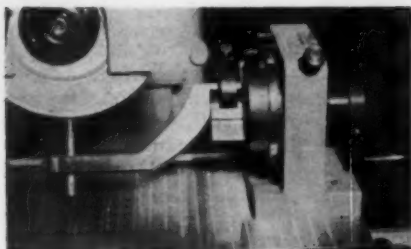
Equipment for Automatic Parts Handling and Assembly



Size: 21"
x 3 1/4" x
5" deep.

**Adjustable
Chuck Holder**
—simplifies
tool mounting,
centering.

DIXON PARTS ESCAPEMENTS
Release single parts or multiples—speeds up to 200 per min. Std. models for air, solenoid, mechanical operation.



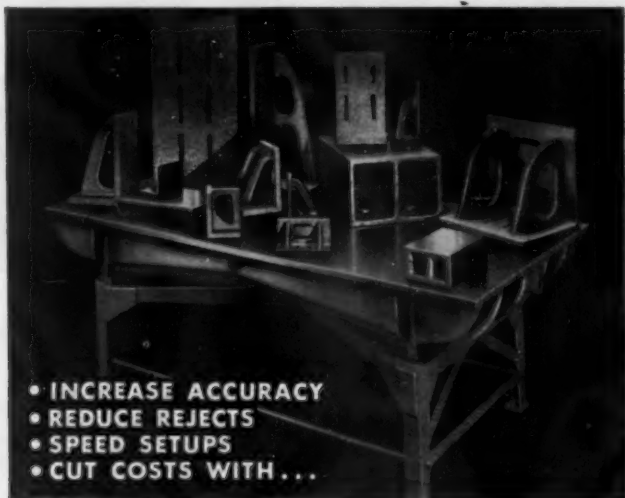
RADIUS DRESSING ARM. A new radius dressing arm attachment makes

Harig's Grind-All Fixture a highly accurate and economical radius dresser. It will dress up to 10" grinding wheels. Harig Mfg. Corp., Chicago, Ill. Space No. 1027.

Use postpaid card. Circle No. 700

Drill Heads

POSITIVE DRILL HEAD can be used for semi or fully automatic operations and is adaptable to multiple drilling and reaming. It quickly interlocks with other units or equipment for automation. It



- INCREASE ACCURACY
- REDUCE REJECTS
- SPEED SETUPS
- CUT COSTS WITH...

MACHINE PRODUCTS PRECISION EQUIPMENT

You'll hold closer tolerances and increase efficiency, too, when you use Machine Products precision surfaces. Because the combination of superior materials, skilled craftsmanship and rigid quality controls in the manufacture of Machine Products equipment assures you of the precise dimensional accuracies you require. A complete line of plates and accessories is available, so send for your free catalog today.

MACHINE PRODUCTS CORPORATION

6771 E. McNichols Rd.

Detroit 12, Michigan

Use postpaid card. Circle No. 434

ASTE EXPOSITION . . .



drills, reams, taps, counterbores, centers, countersinks. May be used for end or

hollow milling, tube flaring, tube facing, chamfering, deburring, boring. Adaptable to base or end mounting. Has assured, accurate depth control. **Bedford Gear and Machine Products, Inc., Bedford, Ohio. Space No. 2008.**

Use postpaid card. Circle No. 701

MODEL 800 HEAVY DUTY DRILLMATION unit uses a standard carbide drill with ordinary soluble oil as a coolant. After a few hours of trial and error to

Now . . . for the first time—

A FLUID POWER TRAINING PROGRAM

to fill industry's need for trained personnel

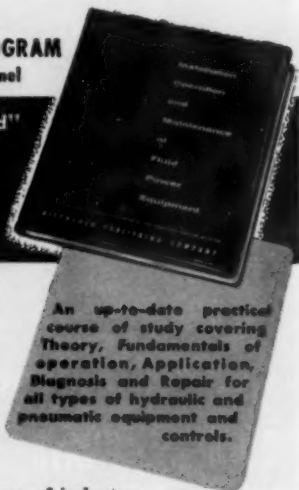
Hitchcock's NEW "job-related" home study course
"INSTALLATION, OPERATION
and MAINTENANCE
of FLUID POWER EQUIPMENT"

The problem of developing properly trained, qualified personnel to install, operate and maintain **FLUID POWER EQUIPMENT** becomes greater day by day. Design simplification and "advanced mechanization" continually expands and increases the uses of **FLUID POWER** to increase production and operating efficiency in all phases of industry.

Hitchcock Publishing collaborated with two of the nation's leading fluid power authorities to develop this program. Now, men can be trained "on-the-job" through home-study and daily direction in the development of practical skills in fluid power.

Hitchcock's course is available to company sponsored group enrollments or individuals on a low-cost basis in a convenient, practical 18 chapter study course. Upon completion of the course, students will attend a 2 day work-shop session for practical review, application and discussion of the material covered.

Investigate the advantages of Hitchcock's **FLUID POWER** home-study course for training individuals to fill your fluid power personnel needs. You'll benefit through increased production and operating efficiency. Send for complete information and enrollment forms today!

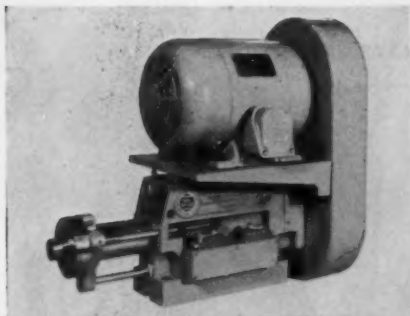


An up-to-date practical course of study covering Theory, Fundamentals of operation, Application, Diagnosis and Repair for all types of hydraulic and pneumatic equipment and controls.

HITCHCOCK
Publishing Company

Dept. of Training & Education
Industrial Services Division
222 E. WILLOW AVE., WHEATON, ILLINOIS

Use postpaid card. Circle No. 435



find the best speed and feed adjustments, the hole was reported drilled automatically in only 80 seconds in a test—a time reduction of more than 98%! The power unit includes flange for mounting up to six $\frac{5}{8}$ drills in steel. Unit shown can also be used for deep hole drilling. Drillmation Corp., Center Line, Mich. Space No. 1371.

Use postpaid card. Circle No. 702

CHOOSE FROM
75 TYPES
AND SIZES

Abart
SPEED REDUCERS



Compact, economical, trouble-free Abart power packages fill any speed reduction need. Any desired shaft arrangement—worm, spur or combination models—fractional to over 400 hp. ratings—single or double reduction—ratios to 10,000 to 1.

Send now for Abart pocket-size engineering data book and catalog.

FREE data-packed 96 page
pocket-size catalog



ABART GEAR and MACHINE CO.

4029 WEST 16th STREET • CHICAGO 50, ILLINOIS

Use postpaid card. Circle No. 436

April, 1958



KEEP COOL TOOL FIRST
MAKE TOOL LAST!

The NEW
EXCITING
VAPOR COOLING
GENERATOR



Write for
Descriptive
Folder

TERRITORIES
AVAILABLE

MANUFACTURED IN U.S.A.

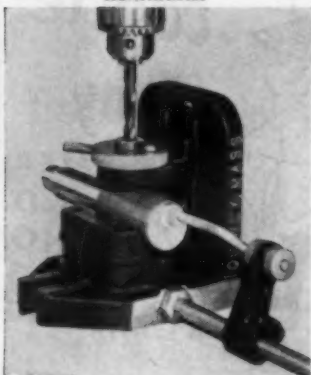
COOLIE-TOOLIE DIV.

P.O. BOX #1 Riverdale Station,
Dayton 4, Ohio

Use postpaid card. Circle No. 437

299

Advertisement



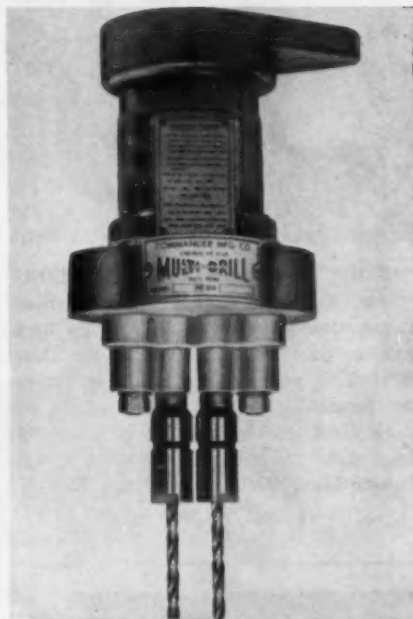
NEW ADJUSTABLE DRILL JIG eliminates layout; cuts drilling time

Used for drilling holes through round stock and hex stock from $\frac{1}{4}$ " to 2" and cap screws from $\frac{1}{4}$ " to $1\frac{1}{4}$ ", the new Mathewson Adjustable Drill Jig eliminates layout and can cut drilling time on small lots to a fraction. And it eliminates the costs of special jigs for larger quantities. Holes for cotter pins, set screws, drive pins for bayonet joints, oil holes in tubular sections, and wiring holes in cap screws, are all typical of the operations that can be done more economically with this jig. Hole diameters range from .052" to .531", using your A.S.A. standard slip bushings. The hardened V-block has two 60-degree V's for centering round or hexagonal stock, one for $\frac{1}{4}$ " to $2\frac{1}{32}$ " diameter, one for $2\frac{1}{32}$ " to 2" diameter. Adjustable stop for locating work longitudinally for drilling any distance from end, may be used on either side. Adjustable bushing carriers hold slip bushings and clamp work securely. Jig highly successful in permitting use of inexperienced drill operators. For circular write to **Mathewson Machine Works**, 42 Hancock Street, Quincy, Massachusetts.

Use postpaid card. Circle No. 438

300

ASTE EXPOSITION . . .



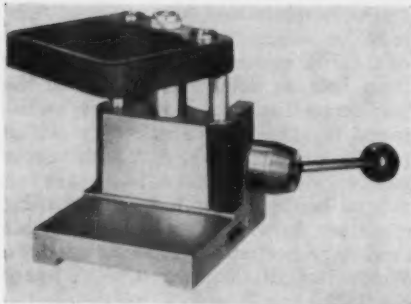
MULTI-DRILL Model 400 is a close-coupled, compact multiple spindle drilling attachment which can be furnished to fit any drill press. It meets the need for a multiple spindle drill head for applications where no more than four holes are to be drilled or tapped at one time, and where the hole pattern is equally spaced. Available with two, three, or four spindles, the drill capacity of the new unit is $\frac{1}{4}$ " in steel. A variety of special spindles and accessories is available and will be demonstrated in the manufacturer's booth. **The Commander Mfg. Co.**, Chicago, Ill. Space No. 945.

Use postpaid card. Circle No. 703

Drilling Fixtures

LIFT SWING DRILLING FIXTURE has top plate swing-away feature for top loading, subsequent machining operations without part removal and

MACHINE and TOOL BLUE BOOK



easy access for gaging. Double top plate for close hole drilling with standard bushings as well as drilling and reaming without bushing changes. Accurate Bushing Co., Garwood, N. J. Space No. 1825.

Use postpaid card. Circle No. 704

Drilling Machines

STRIPPIT PRECISION DRILLING MACHINE. By means of a precision ground lead screw and dial which can

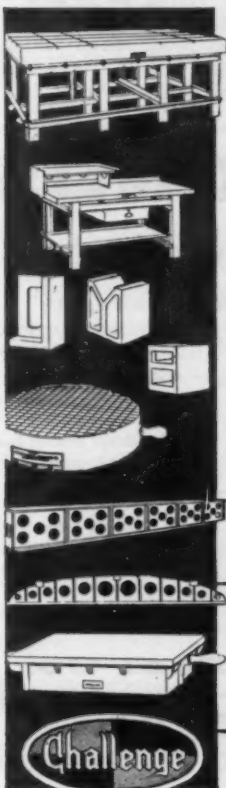
Over 300 types and sizes of PRECISION SURFACES for LAYOUT INSPECTION and ASSEMBLY

Close tolerance precision work demands Precision Surfaces, and Challenge offers the world's widest line of standard precision surface equipment. In addition, if your requirements include large, special surface or floor plates (in Semi-Steel or Granite), Challenge's Custom Engineering can plan and produce them for you.

ASK FOR LATEST CHALLENGE CATALOG SHOWING THE MOST COMPLETE LINE OF

Angle Plates Surface Plates Straight Edges
V-Blocks Floor Plates Welding Tables
Box Parallels Lapping Plates Layout Plates
Angle Irons Bench Plates Work Benches

Handy new Catalog No. 838-W includes complete specifications and prices. See your Industrial Distributor or write Challenge for your free copy.



THE CHALLENGE MACHINERY COMPANY

Dept. MTBB-4

Grand Haven, Michigan

SE-110

Use postpaid card. Circle No. 439

ASTE EXPOSITION . . .



be read to .001", measurements can be made to a high degree of accuracy, and the dimension setting is positively

locked during drilling. Wear on the lead screw is minimized because it is used only for setting dimensions, movement of the drill carriage taking place rapidly from hole to hole, manually, with the lead screw disengaged. It features an integral bend allowance calculator which permits drilling in the flat with proper compensation for material stretch around bends. Illustrated is the drilling machine showing flexible, adjustable steel reference tape and measuring dials. **Wales-Strippit Co., Akron, N.Y. Space No. 1622.**

Use postpaid card. Circle No. 795

CASER MODEL F25 RADIAL DRILL has power arm elevation controlled by a single lever, which locks the arm when lever is in neutral position. A single control starts, stops and reverses the spindle. While machine is running on one operation, speed for the next can be preset on the direct-reading dial. The feed-selector dial has a built-in



DIAMONDS matched to industry!

Clipper fits the diamond tool to your exact requirements. Outstanding application experience is translated into the ideal diamond tool. Engineering and production facilities, second to none, are available to you. So, get our recommendations on

Single-pointed diamond wheel
dressers

Cluster-type diamond wheel
dressers

Diamond-impregnated wheel
dressers

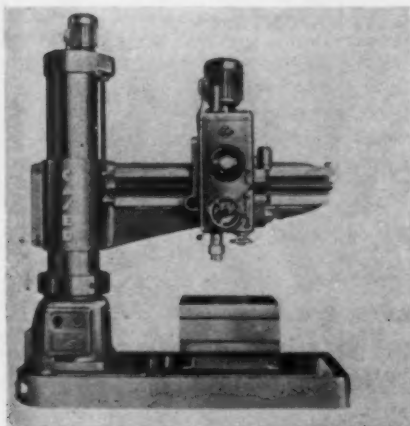
Thread grinding tools
Special-shaped diamond tools for
turning and boring
Diamond tools for radius dress-
ing and radius forming
Also outstanding selection of
diamond wheels and hones

• Latest Literature on Request

Clipper Diamond Tool Co.

345 HUDSON STREET, NEW YORK 14, N. Y. • CHelsea 2-7143

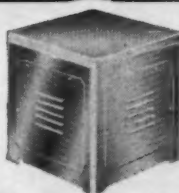




feed and speed chart. Drilling capacity in steel is 1"; in cast iron, 1 1/8". Spindle has No. 3 Morse taper, 8 speeds ranging from 205 to 2300 rpm, 3 feeds. Maserati Corp. of America, Westbury, L.I., N.Y. Space No. 1320.

Use postpaid card. Circle No. 706

**New! STANDARD MACHINE BASES
SAVE ENGINEERING TIME!**



Eliminate the time and expense of building machine bases by using standard machine bases such as illustrated above. These bases are made of steel plate ranging from 3/16" to 5/16" in thickness to insure long service under hard usage. They can be used over and over again by simply making changes in tooling.

Entirely of welded construction, the bases are available in any size from 24" to 48" in length or width and from 24" to 54" in height.

Write
for
Literature

See Them at Booth 801
Some Territories Still Open

INTER-LAKES ENGINEERING CO.

39200 GROESBECK HIGHWAY
MOUNT CLEMENS, MICH.

Use postpaid card. Circle No. 441

AEROSOL LAYOUT INK SAVES TIME, AVOIDS MESS AND GIVES THIN LINE

Slide Thin Line is the die-makers own layout ink. Thinnest, brightest line, easiest possible application. Saves real money because 6 oz. can goes as far as a pint of brush-on ink.

- No broken lines
- Cut right on lines
- Lay out intricate jobs
- Easy to store



\$1.40 . . . single can \$16.68 . . . case of 12

AEROSOL NO-RUST SPRAY PROTECTS METAL SURFACES UP TO FIVE YEARS INSIDE 1 YEAR OUTSIDE

Slide No-Rust gives real rust protection up to five year's inside—1 year outside. Gets into all recesses on dies, stripper and bolster plates, instruments, jigs, and steel of all sizes and shapes. No waste . . . easy to use and store.



- Long protective life
- Cheaper to use
- Fills all recesses
- Used on all steel goods

\$2.35 . . . single can \$23.40 . . . 1-6 doz.
\$21.06 . . . 7-12 doz.

ASK YOUR JOBBER

PERC E. HARMS CO.

1739 HARDING ROAD, NORTHFIELD, ILLINOIS

Use postpaid card. Circle No. 442



DON'T LET THIS HAPPEN

End Oily Floors with

DRY-IT

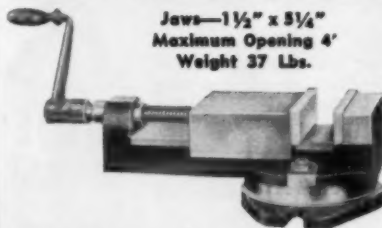
Reduce Accidents and Costly Time-Offs
No Fire Hazard!

Write For Free Sample!

TAMMS INDUSTRIES, INC.
228 N. LaSalle St. • Chicago 1, Ill.

Use postpaid card. Circle No. 443

NEW BRITAIN SWIVEL VISE



Jaws—1½" x 5¼"
Maximum Opening 4"
Weight 37 Lbs.

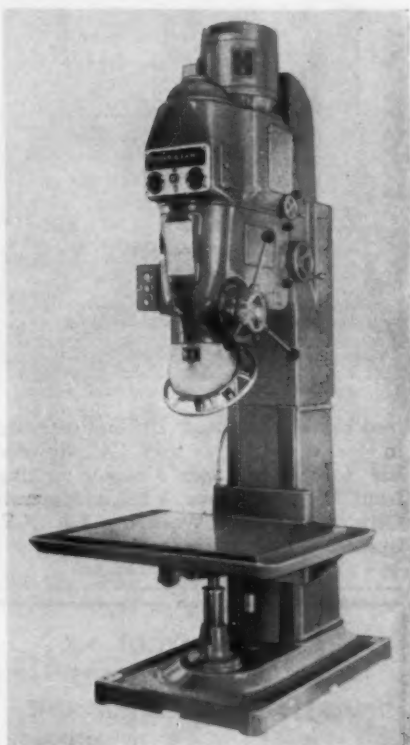
The body is made of semi-steel; the jaws of tool steel hardened and ground. All working surfaces are ground. The vise is as accurate as is possible and the degrees are cut to very close limits.

Write for further information

NEW BRITAIN TOOL & MFG. CO.
13 HARVARD STREET
NEW BRITAIN, CONN., U.S.A.

Use postpaid card. Circle No. 444

ASTE EXPOSITION . . .



ONE INCH CAP. TURRET DRILLING MACHINE. The Model B Turret Drilling Machine has a capacity of 1" in steel and features self-centering spindles, extreme sensitivity, pre-selective controls for speed, depth, and tapping on each spindle, pre-selective, infinitely variable power feeds and optional power indexing. Howe & Fant, East Norwalk, Conn. Space No. 1662.

Use postpaid card. Circle No. 707

GIRARDS RADIAL DRILLS are available in 1½, 2½ and 3" with drilling capacity from 3-10 ft. arms. Barer Engineering & Machinery Co. Ltd., Champlain, N.Y. Space No. 1370.

Use postpaid card. Circle No. 708

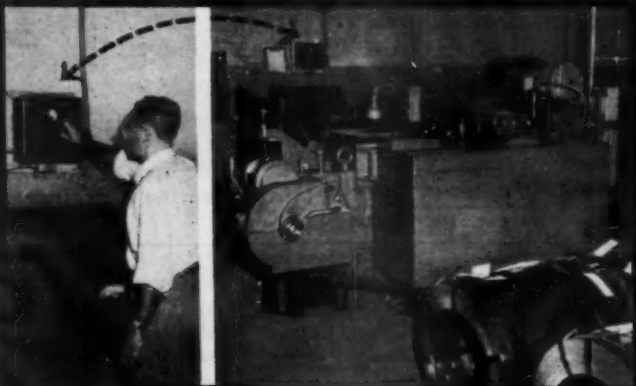
SELF-FEEDING DRILL, capable of drilling, tapping, reaming, counterboring and countersinking, has a capacity of 3/16" and a stroke length of two inches. Unusually compact, this new tool may be adapted to a wide variety of automated operations. It can be operated through solenoids, time switches or any similar devices, including trip mechanisms actuated by the parts to be

worked. Two design features, new to this type of tool, will be displayed for the first time at the Tool Show. **Buck-eye Tools Corp.**, Dayton, O. Space No. 705.

Use postpaid card. Circle No. 724

ALZMETALL DRILL Model AB5/S, with a 30" swing, is powered by a 5 hp motor and has a capacity of 2 1/2" in cast iron. Standard machine includes

Protect Automatic Machinery



Sperry Monitron increases production, saves man-hours, protects cold-headers in the manufacture of General Electric Telechron Clocks

This cold-header automatically stamps out clock parts in complete safety. **MONITRON** will stop the machine the instant that it senses a load change, pile-up, misfeed, dull tool, oversize stock, faulty lubrication, etc.

MONITRON is easy to install... needs no attention... but gives electrically driven presses, conveyors, pumps, automatic machine tools, etc., *every* attention!

Write for complete information. Just attach this advertisement to your company letterhead, give your name and title, and mail to:



SPERRY PRODUCTS, INC.
604 Shelter Rock Road, Danbury, Conn.

Use postpaid card. Circle No. 445

RIVETERS..

GRANT

**PIONEERS
and
PACEMAKERS
in their line**



—head rivets from smallest to 1/2" diameter either by NOISELESS SPINNING or VIBRATING HAMMER method—line to meet all needs—types include Vertical and Horizontal Multiple Spindles

Write for literature and don't forget to send samples

THE GRANT MFG. & MACHINE CO.
CE Station, Bridgeport 3, Conn.

Use postpaid card. Circle No. 447

ASTE EXPOSITION . . .



an infinitely variable speed range drive from 48 to 960 rpm with speeds of 102 to 938 rpm as optional. There are five automatic feeds, from .004" to .16",

get ALL universal features
plus real economy . . .

STERLING "G-2" Universal TOOL & CUTTER GRINDER

Sterling Features include . . .

- 25° Tilting Spindle
- 180° Table Swivel
- 360° Spindle Rotation
- 2 Speed Table
- Anti-Friction Table
- 10 3/4" Swing
- Rugged Construction

From the 2-speed motorized 25° Tilting Spindle to the heavy cast base the **STERLING "G-2"** is built for easier operation with maximum accuracy. Get more cost saving features for less investment.

See your "STERLING" Dealer or write TODAY for details



McDONOUGH

MANUFACTURING CO.

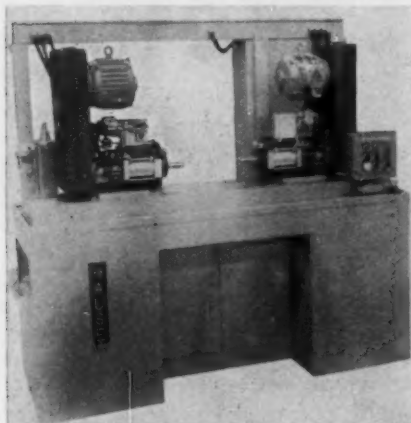
Manufacturers of **STERLING**
Tool & Cutter Grinders and
Drill Grinders

1520 Galloway • Eau Claire, Wisc.

Use postpaid card. Circle No. 446

with an additional feed range of .006" to .022". Additional specifications: No. 5 Morse tapered spindle; spindle travel of 9½"; dia. of column, 8-11/16". Stanley Sheppard, New York City. Space No. 1470.

Use postpaid card. Circle No. 709



DOUBLE END PRODUCTION MACHINE. This machine is designed to perform special operations such as drilling, tapping, reaming, thread rolling, counterboring, facing, centering and other end-cutting tool operations. The machine incorporates two Model 24 Holomatic Drill Units, a steel weldment base and complete air and electric power and cycle control system. A user need only furnish and mount fixtures and tooling to start production. Hause Machine Inc., Montpelier, Ohio. Space No. 1150.

Use postpaid card. Circle No. 710

NUMERICALLY CONTROLLED DRILL. This fully automatic numerically controlled machine is available with combined manual dial and punch tape controls or with dial controls only. All punchings are directly readable in decimal columns and may be easily corrected by shop personnel without special equipment or training. Machine accuracy is .001 inch per foot and rapid

NEW!

HILMA
HYDROVISE

HIGH POWER HYDRAULIC CLAMPING

All the features of mechanical clamping plus the advantages of hydraulic power

COMPLETELY SELF-CONTAINED

No Pump No Hoses No Pipes
No Connections

20,000 LBS. OF PRESSURE, powerful enough to crush granite and sensitive enough to crack an eggshell without breaking the egg.



Each quarter-turn increases pressure 1000 lbs. The clamping power can be controlled and regulated. **ABSOLUTE PRESSURE CONTROL!** Effortless Crank Handle Movement and no spindle wear. Operate your machines at its **FULLEST CAPACITY** and **FULLEST EFFICIENCY.** JOB TESTED here & abroad. Write for illustrated brochure.



WOHLNIP PRODUCTS, INC.
834 CENTRAL AVENUE
EAST ORANGE, N.J.

Use postpaid card. Circle No. 449

HELIOS PRECISION DIAL CALIPER

6"

\$31.80

F.O.B. New York

Guaranteed Accuracy
Within .001"
Reading .001"

- SPEED
- PRECISION
- DEPENDABILITY

Full scale readings of 5"-6"-8"-10" available. Also Foot with Scriber to convert to Vernier Height Gage.

Ask for catalog and prices of other Standard Calipers.



NEISE
MODERN TOOLS

KARL A. NEISE
404 4th Ave., Dept. MT
New York 16, N.Y.

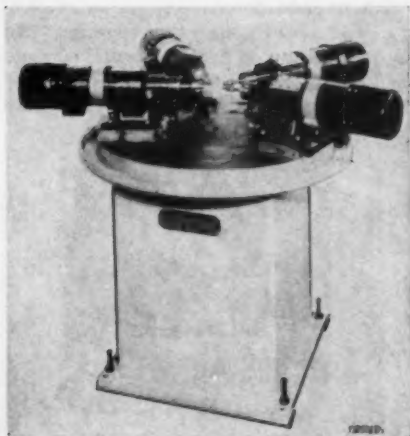
Use postpaid card. Circle No. 448

ASTE EXPOSITION . . .



traverse speed is 100 inches per minute. Hillyer Instrument Co., Cranford, N.J. Space No. 1701.

Use postpaid card. Circle No. 711



UNIVERSAL RADIAL HOLE-DRILLING MACHINE may be purchased with 2, 3, 4, 5, 6, 7, or 8 Model KH drilling units with 3450 rpm drilling speed. Machine may also be used for tapping operations—either Model KT, with



**YOU CAN
BE SURE OF**

with

**Perfect
Alignment**

**ROOFE Heavy Duty
Bull Nose Centers**

Two double rows of quality bearings in the large and small ends of the nose of this Heavy Duty Bull Nose Center make perfect alignment positive on any type of work. Two shank sizes provide diameters from $\frac{1}{2}$ " to $7\frac{1}{2}$ " for a wide range of work with a single center. Write now for complete catalog.

HOUSTON GRINDING & MFG. CO., Inc.

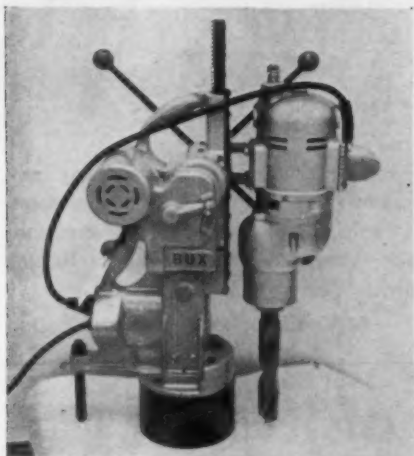
P. O. BOX 7461 • HOUSTON 8, TEXAS

Use postpaid card. Circle No. 450

spindle speed of 1725 rpm, or Model ST, spindle speed of 550 rpm. Pictured is radial machine incorporating four of these units. The Govro-Nelson Co., Detroit, Mich. Space No. 2145.

Use postpaid card. Circle No. 741

Drilling Machines, portable



PORTABLE MAGNETIC DRILL PRESS with automatic power feed, called the Bux-Matic, has a positive feed and two-speed control. Operator fatigue is eliminated and drill bit life increased. One man can operate up to three machines simultaneously. Unit is capable of drilling up to 1 3/4" holes while in any position: side wall overhead or horizontal. Buck Mfg. Co., San Jose, Calif. Space No. 2141.

Use postpaid card. Circle No. 712

GOLDEN SILENCE DRILL features noiseless, blastless exhaust. The exhaust air is routed back through a system roughly parallel to the inlet system, and escapes at a point adjacent to the air inlet. A porous bronze diffuser, lo-

KUHLMANN 2- and 3-dimensional PANTOGRAPH ENGRAVERS



ANTARES INSTRUMENTS INC.

55-02 37th Avenue
Woodside 77, New York

Use postpaid card. Circle No. 451

LOWEST PRICES Diamond Wheel Dressers

Guaranteed to be full, individual stones, mounted in 7/16 x 5" cold rolled shanks

Carat	Price
1/4—	\$ 2.25
1/2—	4.00
3/4—	6.00
1 —	8.25
1 1/2—	12.00
2 —	16.00



★ These diamonds can be set in any shank to your specification for \$1.00 each extra.

★ Prompt resetting service

Allstate Diamond Products, Inc.

Manufacturers of a complete line of
diamond tools and wheels

245 W. 27th St. New York 1, N.Y.
CH 4-7725

★ Dealers' inquiries invited

Use postpaid card. Circle No. 452

**PERFECT CHUCK FOR
SMALL PARTS GRINDING**

only \$55⁰⁰

Sandford "CL"

Permanent Magnetic Chuck

- Very close laminations provide maximum holding power for very small parts
- Contains finest Alnico magnets
- Poled in 3 sections
- No chuck plate required



DIMENSIONS:

4½" long, 2⅛" high, 2⅜" wide

SANFORD MANUFACTURING CORP.
1020 Commerce Ave. Union, N.J.

Use postpaid card. Circle No. 453

ASTE EXPOSITION . . .



cated at the outlet, deadens any remaining exhaust noise and dissipates the escaping air evenly in all directions. The Aro Equipment Corp., Bryan, Ohio. Space No. 1810.

Use postpaid card. Circle No. 713



THINK of it!

NOW you can have a boring head that will **BORE, FACE, TURN** and **GROOVE** at no higher cost than you would pay for an ordinary, single purpose boring head.

THINK this over before buying that new head!

Models for Any Size Machine

Write today for full details

CHANDLER TOOL COMPANY

MUNCIE, INDIANA

A Boring Head
That Won't Face
is NOT Complete



Model
"D"

COMBINED BORING &

FACING TOOL HEADS

Chandler-Duplex

Drills

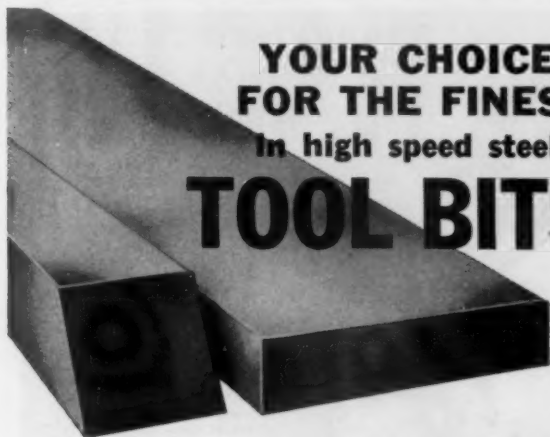


SUBLAND TOOL will be featured at the exhibit. Size optional subland drills come directly from the shelf and carry a maximum of ten-day delivery. The

manufacturer's stock bins contain thousands of semi-completed blanks. All he has to do is finish grind to the specifications. **Mohawk Tools, Inc., Montpelier, Ohio. Space No. 230.**

Use postpaid card. Circle No. 714

SPADE DRILLS are designed to expedite production of holes in heat-treated alloy steels, stainless steel, titanium and other types of hard-to-machine metals and castings. The re-



**YOUR CHOICE
FOR THE FINEST ★
In high speed steel
TOOL BITS!**

VASCO SUPREME

- ★ Higher Hardness
- ★ Higher Hot Hardness
- ★ Higher Wear Resistance
- ★ Higher Cutting Efficiency

—THAN ANY OTHER HIGH SPEED STEEL

For every job involving wear or high cutting temperatures, Vasco Supreme Tool Bits cut faster and longer—make profits for you! *Prove it* on heat treated steels, hard cast iron, aluminum, brass, plastics. Available in squares and flats from stock. Write for Vasco Supreme folder and Data Sheet.

**VANADIUM-ALLOYS STEEL CO.
LATROBE, PA.**

Use postpaid card. Circle No. 455

ASTE EXPOSITION . . .



placeable spade-type drill blades are made of the new M-3 type high-speed steel, which is said to increase produc-

tion five to eight times over the 18-4-1 high-speed tool steel. Coolant is circulated internally through the shank and directed outwardly against each cutting edge. Each shank accommodates a number of individual blade sizes. Available sizes at present range from 1-1/6" to 5" o.d., with other sizes beyond this range available on special order. Robert H. Clark Co., Beverly Hills, Calif., Space No. 1901.

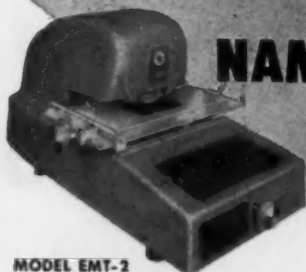
Use postpaid card. Circle No. 715

CUT PRODUCTION COSTS!

MARK

NAME PLATES

5 TIMES
FASTER



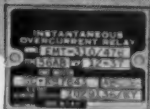
MODEL EMT-2

ELECTRIC TAG TYPEWRITER

A touch of the finger delivers up to 2 tons pressure for deep, legible impressions in metal or plastic tags.

-WITH-
Automark

ELECTRIC TAG MARKING MACHINES



MODEL SRST-2

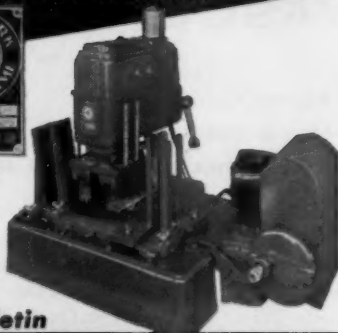
HI-SPEED

TAG MARKING MACHINE

Automatically marks BOTH constant and serial numbers at any desired speed up to 8,000 tags per hour!

MANUFACTURER'S AGENTS—
Some Territory Still Available

Send Now for Bulletin



DEFIANCE MACHINE & TOOL COMPANY

1922 S. VANDEVENTER

Dept. 617

ST. LOUIS 10, MO.

Use postpaid card. Circle No. 456

HARDSTEEL DRILLS, for drilling hardened steels without the necessity for any annealing operation, as well as Hardsteel HD-27M tool bits will be displayed at the Show. These are made of a new alloy containing complex oxide additives which impart to the metal higher tensile strength and toughness, higher red hardness, maintained edge strength and low coefficient of friction. Cutting tools are

claimed to take deeper cuts at higher speeds with heavier feeds—remove more metal with less cratering. Because of its lower coefficient of friction the new alloy is recommended for the type of castings which will be on display, including lathe centers, lubrication-free bearings, grinding rests, dies, gage parts and spinning tools. **Black Drill Co., Inc.**, Cleveland, Ohio. Space No. 1051.

Use postpaid card. Circle No. 710

EVERY TIME YOU MOVE A MACHINE

Barry
Machine Mounts
CUT
MAN-HOURS
90%

In new
installations —
In relocating
machinery —

you get savings
like these!

3 man-hours
instead of 42 man-hours
to move machines at Johnson & Johnson

60% saving in new machine
installation cost at
American Type Founders

No lost production time
in moving a complete machine shop at Wyman-Gordon

Barry Leveling Machinery Mounts
let you move machines wherever they are needed,
and have them in full production in minutes —
with no delays for drilling, lagging, or shimming.

Write now for the Field Reports that prove these savings —
that you can get with Barry Machinery Mounts.



BARRY
CONTROLS
INCORPORATED

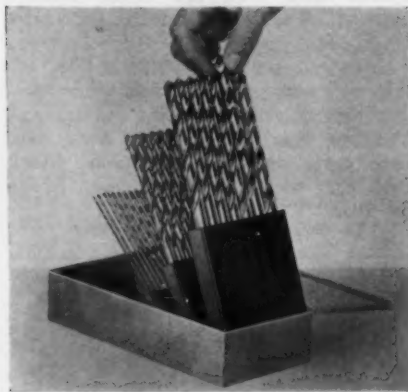
BARRY B MOUNT

SOLD THROUGH INDUSTRIAL
DISTRIBUTORS

784 PLEASANT STREET, WATERTOWN 72, MASSACHUSETTS

Use postpaid card. Circle No. 457

ASTE EXPOSITION . . .

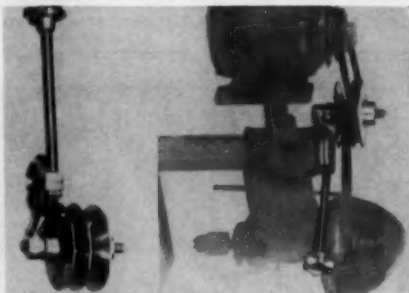


THREE TAPER LENGTH DRILL SETS include taper length drills in fractional, wire and letter sizes packaged in convenient folding metal index cases. The No. 29 Halfpak fractional size set consists of 29 taper length drills ranging

in diameter from 1/16" through 1/2" by 64ths. The No. 60 Wirepak set contains wire size taper length drills from 1 through 60 inclusive, while letter sizes A through Z are included in the No. 26 Letterpak set. **Ace Drill Corp., Adrian, Mich. Space No. 432.**

Use postpaid card. Circle No. 717

Drives



RATEST INSTANT SPEED VARIATOR, using a self-compensating, floating pul-

Why Replace that Worn Machine Tool?

Let Burkhard Rebuilding give your machine many more years of economical, quality production

Burkhard Rebuilding is Guaranteed in writing to "give the same Tolerance, Quantity and Quality of work as when new." Ask for quotations, free, on rebuilding your machines.

Write for Form No. 025 Today



Hand Scraping is an advanced art in our plant. Why not let us quote you on rescraping your surface plates. Merely write us the size of the plate or plates.

BURKHARD BROS., INC.

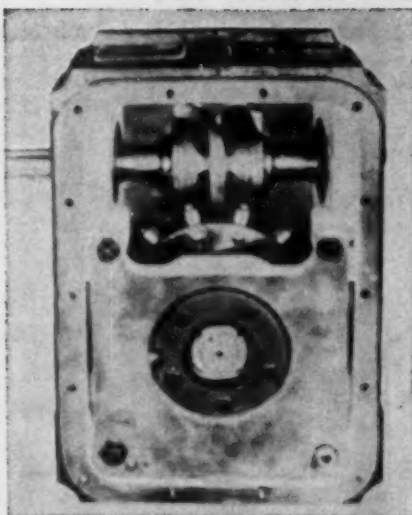
P.O. Box 187 Eastwood Station
203 Waver St., Syracuse 6, N. Y.
Phone HOward 3-0287

Use postpaid card. Circle No. 458

ley arrangement, permits machine speed changes without stopping the motor. A variable speed range of $6\frac{1}{2}$ to 1 ratio is obtainable with fingertip control. The unit fits any standard $2\frac{3}{4}$ " drill press support post without the use of tools. Angle brackets for special installations in either horizontal or vertical positions are available. No manual changing or adjusting of V belts is required. The Custanite Corp., Brooklyn, N.Y. Space No. 2043.

Use postpaid card. Circle No. 718

FERGUSON DRIVE consists of a cam with a tapered rib and a hub with preloaded bearing followers, two of which remain in contact with the cam rib at all times to insure zero backlash. During the "dwell" position the followers are locked positively by a straight portion of the cam rib. Indexing accuracy is better than .001" without auxiliary locating devices. Pictured is the drive in standard housing. Ferguson



Machine Corp., St. Lou's, Mo. Space No. 605.

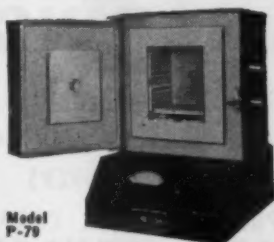
Use postpaid card. Circle No. 719

PRODUCED AND PRICED RIGHT FOR YOUR ELECTRIC FURNACE NEEDS

DYNA-TROL

MODEL NO.	FIRING CHAMBER (H.W.D.)	PRICE (300° to 2000°)	PRICE (400° to 2300°)
P48	4½"x4½"x8"	\$90.00	\$110.00
P79	8"x6"x9"	\$285.00	\$225.00
P818	9"x9"x18"	\$480.00	\$528.00
P414	14"x14"x14"	\$525.00	\$605.25
P124	12"x12"x24"	\$715.00	\$822.25
P818	18"x18"x18"	\$775.00	\$887.50
P136	18"x18"x36"	\$1125.00	\$1312.50

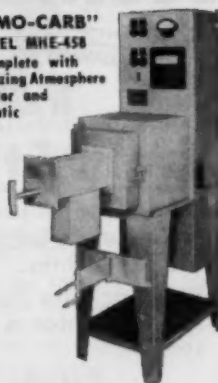
Automatic Controls Available on all Models



Model P-79

- Infinite zone temperature control
- Zone temperature indication by Pyrometer Selector Switch
- Automatic hold and cut-off instrument available
- Patented element holders
- Infinite variety of time-temperature curves obtainable
- Rugged construction

"ATMO-CARB"
MODEL MHE-458
Complete with
Carburizing Atmosphere
Generator and
Automatic
Control



\$1325.00

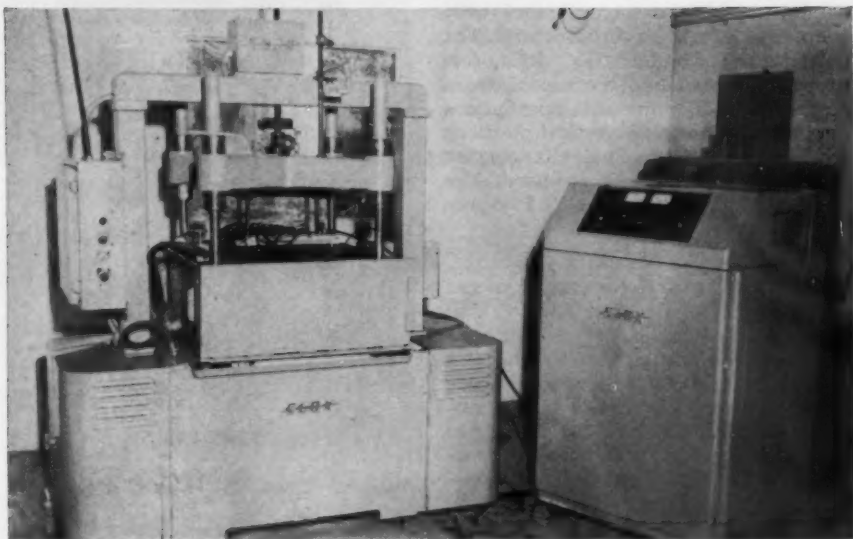
Other Sizes and
Arrangements Available



MANUFACTURING CO.
Chester 65, Pa.

ASTE EXPOSITION . . .

Electrical Discharge Machines



ACME **TAPS** **from Stock!**

Immediate shipment from factory stock, $\frac{1}{8}$ " to 3" diameters by eighths.

Write or wire for catalog prices, or for quotes on specials.



HORSPPOOL & ROMINE
MANUFACTURING CO., INC.
5850 Marshall St., Oakland 8, Calif.

Use postpaid card. Circle No. 460

PRECISION ELECTRICAL DISCHARGE machine. Available in three sizes, the M-600 series incorporates the ruggedness of a die set, while retaining the precision demanded. Weight capacities are to 12,500 lb. The same unit may be used to make dies of many types (blanking, forging, extrusion, powdered metal, etc.), or for special application work such as air foil shapes and intricate-shaped holes. **Elox Corp. of Michigan, Royal Oak, Mich. Space No. 935.**

Use postpaid card. Circle No. 720

JIG BORING and

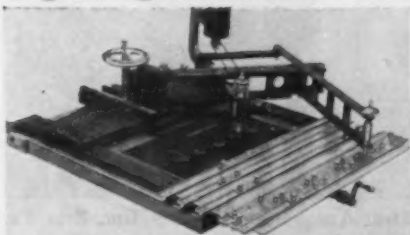
Large Precision Machining
Done to your specifications

WE HAVE 22 JIG BORERS
KIDDE PRECISION TOOL CORP.
25 LOCUST AVE. ROSELAND, N.J.

Use postpaid card. Circle No. 461

MACHINE and TOOL BLUE BOOK

Engraving Machines



ENGRAVING MACHINE has no size limitations. The smallest nameplate, the

largest panel, and any size in between can be engraved with the new Engravograph Model I-R. The machine is especially designed for the electronic and electrical industries for engraving oversize panels which cannot be accommodated by any other machine. The pantograph assembly, motor, and copy table are built as an independent unit on one chassis. **New Hermes Engraving Machine Corp., New York City. Space No. 964.**

Use postpaid card. Circle No. 721

quadrill

4 Position Drilling and
Tapping
TURRET HEAD

Does the work of
4 drill presses

**DRILLS • REAMS
COUNTERSINKS
COUNTERBORES**

The quadrill performs all these operations without setting up each time. Any of four cutting tools can be brought into drilling position by indexing the turret. A real time and cost saver!



**FITS ALMOST
ANY DRILL PRESS**

TAP with the **quadtapper**



FOR USE ON QUADRILL ONLY

By attaching the QUAD-TAPPER to any of the four spindle assemblies of the QUADRILL, you can drill and tap almost simultaneously. Affords accurate tapping at high speeds.

**DESIGNED FOR PRODUCTION
COST CUTTING**

Send for complete details of both QUADRILL and QUAD-TAPPER construction and operation features.

**CHICAGO QUADRILL
Company**

1846 BUSSE HIGHWAY • DES PLAINES, ILL.

Use postpaid card. Circle No. 462

ASTE EXPOSITION . . .

Feeds, parts, vibrating

ESCAPEMENT PRINCIPLE AND ORIENTATION DEVICE enables stack feeding of fuzzy washers or star pronged type. This is accomplished by feeding single line into a pin or floating mandrel, and removing them singly from the bottom of the magazine. The speed rate attained with a small size feeder is 100 PPM for a No. 8 lock washer. Peeco



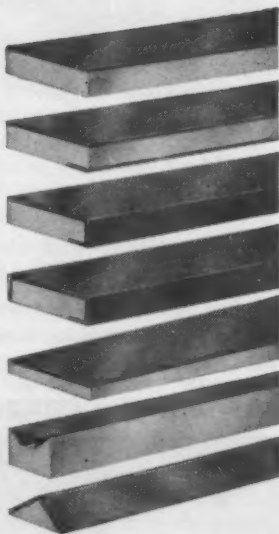
Div., Automation Devices, Inc., Erie, Pa.
Space No. 1414.

Use postpaid card. Circle No. 722

The Ohio Knife Co. is offering machine tool builders and users amazing new hardened ways.

available in 7 standard
cross sections in over
sixty sizes.

By a time proven process, special analysis tool steel of any thickness is eternally bonded to a soft, tough, easily machinable steel, producing a superior way that will not warp or bow. Special O-KNI-CO hardening process (65-66 Rockwell C) to full depth of tool steel, along entire length of way, develops tremendous wear-resistant qualities, practically eliminating galling or scoring. The result is a continuing high degree of accuracy of the machine under even the severest work loads.



FREE

technical literature available.

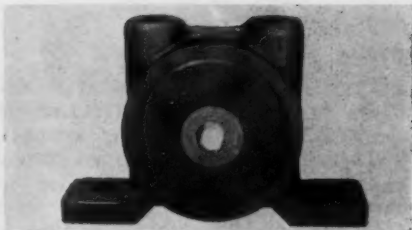
- ☐ HARDENED WAYS—Seven Cross Sections in over 60 sizes.
- ☐ SHEAR BLADES.
- ☐ SLITTING—A Basic Guide for the New Operator.

THE OHIO KNIFE CO., Cincinnati 23, Ohio, Dept. 73-D

Use postpaid card. Circle No. 463

SILENT BALL ACTUATED VIBRATION INDUCERS. A series of 10 sizes have been added to the Vibrolator line. Used for causing movement of parts in bins, hoppers, chutes, and assembly fixtures, the units induce vibration at stepless frequencies from zero to 85,000 cpm. Martin Engineering Co., Neponset, Ill. Space No. 1361.

Use postpaid card. Circle No. 723



THE *Right CLAMP*
THE *Right PART*
FOR EVERY WORKHOLDING JOB



FIXTURE CLAMPS

Over 170 Styles and Sizes

WESPO fixture clamp assemblies save up to 70 percent on your designing and machining. They are standard with leading manufacturers.

1,000 TYPES & STYLES OF COMPONENT PARTS

See us at the A.S.T.E. Show Booth 1757



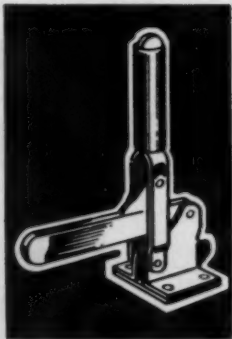
Write for
Catalog of
Toggle Clamps
or Fixture
Clamps & Parts



WEST POINT MFG. CO.

26945 W. 7 Mile Road • Detroit 19, Michigan

Use postpaid card. Circle No. 464



**TOGGLE CLAMPS
and PLIERS**

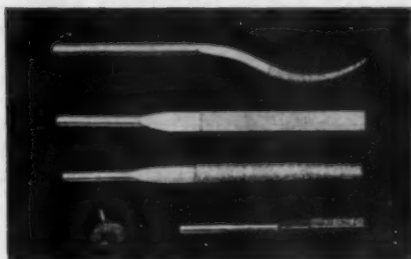
Over 80 types and sizes from $\frac{1}{8}$ " Midget to 12 $\frac{1}{2}$ " Clamp. PLIERS, from $\frac{1}{8}$ " Jaw Midget to 4 $\frac{1}{4}$ " wide Jaw.

Featuring REAMED HOLES, for better bearing — HARDENED BUSHINGS — SERRATED to prevent turning — HIGH TENSILE STRENGTH RIVETS for longer service.

ASTE EXPOSITION . . .

Files

RIFFLE FILE COATED WITH 90 MICRON DIAMOND PARTICLES is available in four shapes (cross-sections). The diamond particles are accurately graded and permanently bonded in chrome deposit on a hardened steel core. The rifflers, together with a broad selection of straight diamond files in



**NYLON
KOOLSHIELD**

**FOSTORIA
LOCALITE**

Industry's Favorite
Cost-Saving
Seeing Tool

Cool

**100-WATT LAMP
ILLUMINATION**

A marvelous accessory that snaps over reflector for positive coolness to the touch when using 100-watt lamp.

\$1.02 ea.
in Std.
Pkg.
of 4.
Fits all
old and
new
model
Localite
half
shade re-
flectors.



★ Equipped with marvelous
new collar-disc
arm joints



Finest Seeing Tools Ever Designed

FOR MACHINE TOOLS, ASSEMBLY, INSPECTION
Millions in use for fast, accurate, safe seeing. Frictional arm and collar-disc joints give flexibility of a thousand positions to direct light exactly as wanted. Rugged construction, heavy duty socket, Levolver switch, universal base.

WRITE for complete
catalog of Localite
Models for every
industrial need.

**THE FOSTORIA PRESSED STEEL
CORPORATION, FOSTORIA, OHIO**

Localites are available through
wholesalers everywhere.



Use postpaid card. Circle No. 446

MACHINE and TOOL BLUE BOOK

numerous shapes and sizes, provide fast cutting action and can be operated at high speeds and temperatures. Engis Equipment Co., Chicago, Ill. Space No. 218.

Use postpaid card. Circle No. 725

MAGICUT, ALL-PURPOSE MACHINIST'S FILE (pictured), for fast stock removal and smooth finishing on aluminum, brass, bronze, malleable iron, and annealed tool steels will be fea-

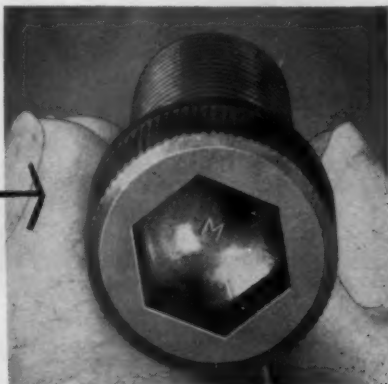


tured, and other hand steel files for industrial use. **Nicholson File Co., Providence, R.I. Space No. 406.**

Use postpaid card. Circle No. 726

Mac-it
Socket Head
Cap Screw

Mac-it screws hold where others fail!



When you buy screws, you're buying **holding power**. The powerful holding you get with Mac-it Screws makes them last longer in tough applications, keeps them good for thousands of adjustments. Here's why:

- special pre-tested alloy steels
- precisely controlled grain structure
- resilient, shock-resisting strength
- heat treated for "clear-thru" toughness
- clean, fully formed Class 3 threads
- high dimensional accuracy

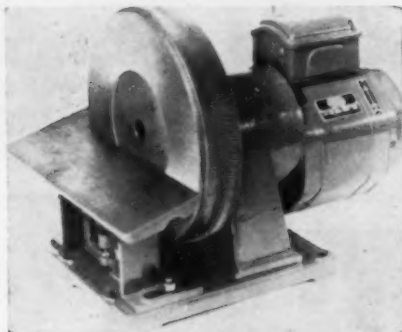
As a result, on machinery subjected to shocks, stresses or high speeds, you'll find Mac-it Screws—**holding!**



Mac-it Screw Division
STRONG, CARLISLE & HAMMOND
1392 West 3rd Street, Cleveland 13, Ohio

Use postpaid card. Circle No. 467

Filing Machines



ROTARY POWER TOOL. The new R-Filemaster performs filing, shaping and milling of any material that can be worked with a file. This tool can remove material 3 to 10 times faster than hand filing. **Hudson Automatic Machine and Tool Co., Union City, N.J. Space No. 1055.**

Use postpaid card. Circle No. 727

Filtration Equipment



FILTRATION OF COOLANTS, cutting oils, and hydraulics is accomplished economically through the Alsop method

of Sub-Micron filtration. Equipment can be attached to any present machining, grinding, or finishing installation or can be supplied as original equipment to manufacturers. Photo shows PAK 8-3 Type VP, 15 G.P.M. positive displacement rotary pump, cleanable suction strainer, three-way part transfer valve and sampling valves. **The Alsop Engineering Corp., Milldale, Conn. Space No. 1062.**

Use postpaid card. Circle No. 728

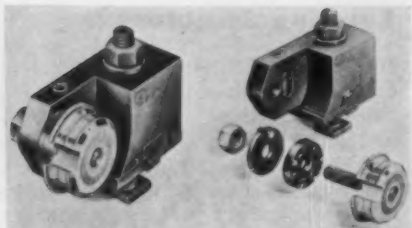


HIGH PRESSURE COOLANT UNITS feature three stages of filtration which are said to insure minimum filter maintenance. Final stage is a manifold of three 40 micron auto-clean filters. Pressure is adjustable from 0 to 750 psi. There are two models—40 G.P.M. and 60 G.P.M. **Madison Industries, Inc., Muskegon, Mich. Space No. 1224.**

Use postpaid card. Circle No. 729

Fixtures

ADAPTOOL-POST TOOLING FIXTURE makes it possible to use smaller, less costly form tools in larger sizes of screw machines. Larger machines can handle a greater variety of work sizes. Addition of this new model to the line



provides a complete size range from:
No. 00 tools adapted to No. 0 machines

to No. 2 tools adapted to No. 4 machines.
**The American Cam Co., Inc., Hartford,
Conn. Space No. 1067.**

Use postpaid card. Circle No. 730

Fluid Power Equipment

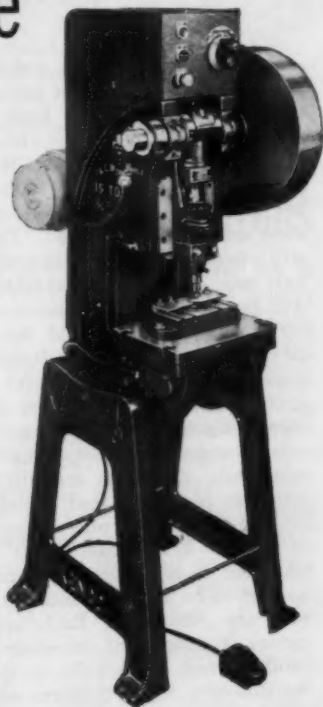
NEW HOME-STUDY PROGRAM will teach men how to install, operate, and maintain fluid power equipment. A discussion-type lesson accompanies each

KENCO

15-ton Electro-Safe the safest punch press you can buy!

Single-trip control buttons are widely spaced, to keep hands clear of the danger zone. Operators must push *both* buttons at once...hold them until stroke reaches bottom, then release both buttons to start new cycle. Fail-safe operation. Impossible to "fudge." Impossible for press to double trip.

Versatile controls—You can change from "single trip" to "continuous stroke," or "inching" by merely turning a dial. You can change timing in seconds. No flywheel...no clutching. Write for details.



KENCO MANUFACTURING CO. 5211 Telegraph Road, Los Angeles 22, Calif.

Use postpaid card. Circle No. 468



chapter. This is to be completed and returned by the student before receiving the next chapter. Each lesson is graded; personal comments help to clarify problems which trouble the pupil. Upon satisfactory completion of the 18-chapter course, a two-day workshop session is scheduled. The student will attend a general assembly for one-half day, where experts from industry will present panel discussions. The remainder of that day and the next will be spent in small groups directed by the panel members. Particular interests, problems, and ideas will be covered at these sessions. Each chapter of the correspondence course is profusely illustrated. Subjects are divided into bite-size pieces so that something new can be learned in only a few minutes of study. The student sets the pace, studying in his spare time, progressing as fast as he chooses until all 18 chapters are completed. Each student receives a loose-leaf simulated leather binder when he enrolls in the course. In this are filed chapters and worksheets as completed. **Hitchcock Publishing Co., Wheaton, Ill. Space No. 410.**

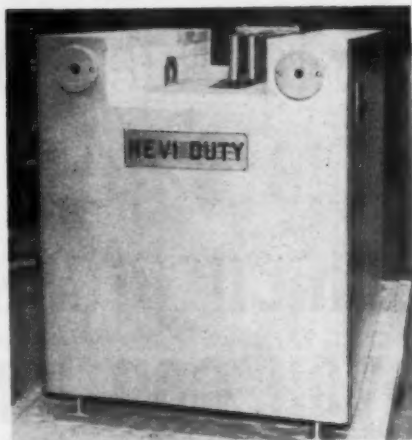
Use postpaid card. Circle No. 083

Forming Machines

ON DISPLAY UNDER POWER at the Show will be sheet plastic forming machine designed to automatically blank and form packaging components from coil plastic. The machine can form articles with dimensions up to 9 x 11 inches or circular parts to 9 inches in diameter at rates from 15 to 25 ppm. **Emhart Mfg. Co., V & O Press Div., Hudson, N.Y. Space No. 721.**

Use postpaid card. Circle No. 731

Furnaces

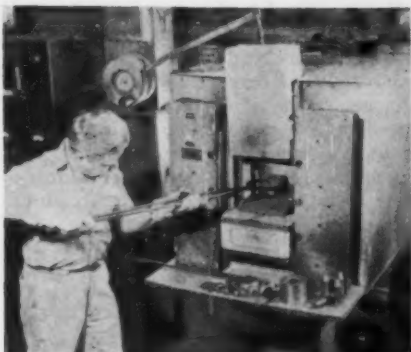


ELECTRODE SALT BATH FURNACE.

The Hevi-Duty Immersed Electrode Salt Bath Furnace is used for hardening high speed tool steels. A ceramic pot permits the furnace user to operate this furnace at temperatures to 2400 degrees F. **Hevi-Duty Electric Co., Milwaukee, Wis. Space No. 205.**

Use postpaid card. Circle No. 732

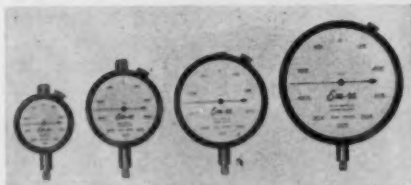
MODEL "Y" FURNACE, similar to the unit pictured, will be in operation demonstrating the ease of producing clean hardening on the easily decarburized M-10 high speed steels. The positive, neu-



tral atmosphere required for hardening without scale or decarb is produced by Sentry diamond blocks. This simple method of atmospheric control is claimed to be constantly correct for all types of high carbon high chrome and high speed steel. **The Sentry Co., Foxboro, Mass. Space No. 436.**

Use postpaid card. Circle No. 733

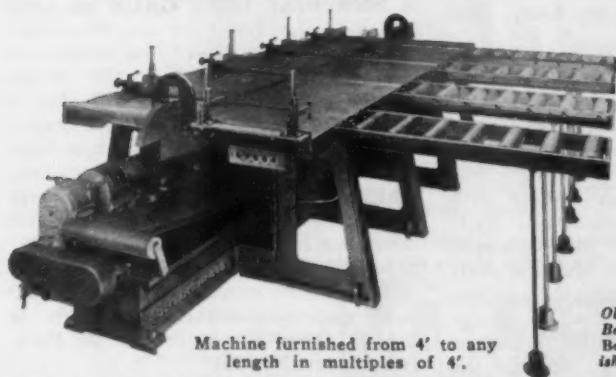
Gages and Accessories



96 EM-RE DIAL INDICATOR MODELS are now obtainable in all four A.G.D. groups, with bezel diameters of $1\frac{5}{8}$ ", $2\frac{1}{4}$ ", $2\frac{3}{4}$ " and $3\frac{5}{8}$ ". The various models include A.G.D. ranges of .250", .125", .100", .075", .050" and .025", and are graduated in .001", .0005", .00025" and .0001". They provide exceptional accuracy, repeatability, and durability. **Petz Emery, Inc., Pleasant Valley, N.Y. Space No. 435.**

Use postpaid card. Circle No. 734

Leading metal workers cut large nonferrous sheets and plates smoothly, fast on this OLIVER Plate saw



Machine furnished from 4' to any length in multiples of 4'.

The Oliver Plate Saw is successfully used in large aircraft plants to cut costs. Cuts large sheets or plates of aluminum up to 6" thick. Also copper, bronze, micarta and similar materials. Saw unit travels 1' to 40' a minute, returns 40' a minute. Cast iron tables each side of saw: $2\frac{1}{2}' \times 12'$. Each table extension $18" \times 49"$ has 7 rollers.

Write for Bulletin No. 838

Oliver makes Circular Saws, Band Saws, Shapers, Millers, Belt and Disc Grinders and Polishers, Spinning Lathes.

OLIVER MACHINERY COMPANY, Grand Rapids 2, Mich.

Use postpaid card. Circle No. 469

ASTE EXPOSITION . . .



PG-800 PRECISION GAGE AND PG-400 SIZE-SETTING FIXTURE, for measuring internal diameters. The combination of the two instruments represents an entirely new system of internal precision-measuring without the use of ring gages, gage blocks, or other standards. Its range is from $\frac{3}{16}$ " to $1\frac{1}{2}$ " dia. Sizes to the nearest thousandth of an inch are dialed-in by turning two knobs on the setting fixture; the size is then transferred into the gage. Tenths, or fractions of a tenth, are set directly on the gage scale which is graduated in 50 millionths of an inch. **Sunnens Products Co., St. Louis, Mo. Space No. 1438.**

Use postpaid card. Circle No. 735

INDI-RON, a new ultra-precision roundness, concentricity and squareness gage, consists of a rotating table mounted on a precision spindle with one or more Indi-Ac electronic indicators scanning the part. Measurements are plotted on a polar co-ordinate chart recorder synchronized with the rotation of the spindle. Error caused by spindle run-out is less than three millionths of an inch (.000003"). By rotating the part instead of the gage head, it is

possible to refer the concentricity and roundness of several diameters to each other simultaneously and much more accurately. Roundness and profile characteristics of balls, rollers, bearing races, cylinders, gages, shafts from $1/16$ " to 6" dia. can be determined and permanently recorded in a few minutes' time. **Cleveland Instrument Co. Inc., Cleveland, Ohio. Space No. 953.**

Use postpaid card. Circle No. 736



A NEW DIAL BORE GAGE has been added to the Tri-O-set kit. This gage, the 2/0, with the use of four extensions covers a range of .084" to .125". When added to the basic kit, it will offer a greater range. It takes but four gages, 15 extensions, to cover a range from .084" to 1.000". Adjustable setmaster, which kit includes, replaces all master rings. The price for the basic kit with setmaster for a range of .125" to 1.000" is \$419.50. Price for kit to cover complete .084" to 1.000" range is \$519.50. The 2/0 bore gage purchased separately is \$175.00. **Boice Gages, Inc., Hyde Park, N.Y. Space No. 234.**

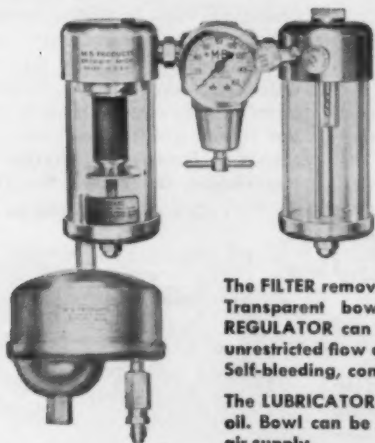
Use postpaid card. Circle No. 737

WORK POSITION LOCATOR Model XA-515 Ex-Ac quickly and accurately locates or measures work position and dimension on jig borers, jig grinders, and other machine tools with rotating spindles. The Ex-Ac itself is capable of measuring accurately to a few millionths of an inch; consequently, locating accuracy on a jig borer is limited only by the table lead screw and ma-

chine spindle accuracy. Indicator accuracy and operator skill are not limiting factors. The locator consists of an electronic frictionless indicator gage head, slip ring and amplifier with meter. The indicator gage head and slip ring are attached to the jig borer spindle and may be rotated manually or under power at speeds up to 100 rpm. The slip ring eliminates wind-up of the

GREATER PROTECTION to your AIR LINE! **M-B**

WHIRL-A-WAY FILTER, REGULATOR AND LUBRICATOR ASSEMBLY AND AUTOMATIC AIR TRAP (MODEL W-4)



**SUCCESSFULLY
USED FOR
PROTECTION
OF AIR VALVES
CYLINDERS
CONTROLS
PNEUMATIC
TOOLS, ETC.**

The **FILTER** removes solids .00039 and larger. Transparent bowl provides visibility. The **REGULATOR** can pass large volume with an unrestricted flow and minimum pressure drop. Self-bleeding, compact.

The **LUBRICATOR** delivers desired volume of oil. Bowl can be refilled without shutting off air supply.

The Air Trap is automatic and eliminates manual draining.

M-B PRODUCTS
46 VICTOR AVE., Div. 22
DETROIT 3, MICHIGAN

VISIT OUR BOOTH 1459 A.S.T.E. SHOW

Use postpaid card. Circle No. 470

ASTE EXPOSITION . . .

gage head leads around the spindle. The Ex-Ac meter may be located at any convenient viewing location nearby or on the machine. Cleveland Instrument Co. Inc., Cleveland, Ohio. Space No. 953.

Use postpaid card. Circle No. 738



SMALL BORE GAGE, the Bore-Test, is a compact and highly versatile comparator. It will indicate taper, bell mouth, out of round, and other dimensional variations of bores ranging in size from .057" through .810". Instrument may be used in blind or multiple diameter holes. Alina Corp., Mineola, L.I., N.Y. Space No. 1774.

Use postpaid card. Circle No. 739

MAGNA-SET SYSTEM is designed to take precision height measurements with gage block accuracy, to any desired height—even to the ceiling. This system uses a Hite-Icator for measurements to 10" or 20", with 9" riser blocks to build to greater heights. The new Hite-Icator is claimed to represent an



advance in operating ease and speed. The sensitive dial indicator is actuated by the gage-block column itself, as it moves up and down over the 1" range of the micrometer head. It is therefore easy to position within a thousandth without squinting—the dial is readable from a distance of several feet. Then, when the rough position has been established by quickly spinning the micrometer head, finer adjustment brings the height of the measuring surface right down to a tenth, and the exact height can be read to .0001" from the fine graduations on the mike thimble. Brown & Sharpe Mfg. Co., Providence, R.I. Space No. 122.

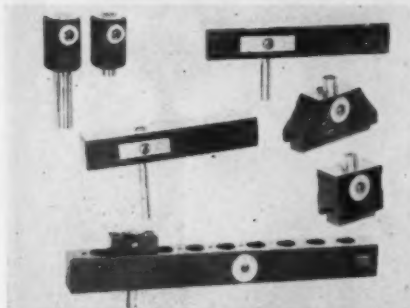
Use postpaid card. Circle No. 740



CHROME CLAD MICROMETER, with disc measuring faces is reported ideal for measuring gear teeth, forming tools, and dies. It measures to a depth of $\frac{1}{8}$ "

on forms having grooves wider than .015". The instrument is available in two sizes: the No. 3611 with a range of 0 to 1" by thousandths inch, and the No. 3612 with a range from 1 to 2" by thousandths inch. **The Lufkin Rule Co., Saginaw, Mich. Space No. 1046.**

Use postpaid card. Circle No. 742



FLUSH-PIN GAGE BLANKS. 34 different models of barrel type flush-pin gage blanks, 2 models of large dia.

"countersink type" flush-pin gage blanks, and 124 models of bar type flush-pin gage blanks are available. These may be purchased for finish grinding in the customer's own tool-room, or they may be purchased finish ground to part requirements from Davis. **A. G. Davis Gage & Eng. Co., Hazel Park, Mich. Space No. 144.**

Use postpaid card. Circle No. 743

HUNDREDS OF REPAIRS

Metal - Wood - Plaster
Glass - Plastic



Lab-metal

**SPREADS LIKE PASTE — HARDENS TO METAL
EASY! FAST! NO MIXING!**

Available at your distributor or write

ALVIN PRODUCTS, Inc.

Worcester 4, Mass.

Use postpaid card. Circle No. 479

ROYAL Self-Releasing Collets with Clover Leaf Grind

Royal specialization pays off. The new Royal self-releasing collets have won wide acclaim for their ease of handling and production savings. Specify Royal and get these plus features at no extra cost!

*Also Milling Machine Types 9B&S, 7B&S, 2MT, R8

*Special Collets Made To Order

Available in
5C, 3C,
3AT, 6AT

■ a new concept in COLLET DESIGN by ROYAL

- Real spring tension
- Wider opening
- No gauge fit for secondary operations
- Parallel bearing surfaces prevent wear
- No binding on closing and releasing
- Properly heat treated
- Made of selected steel
- Rigidly inspected



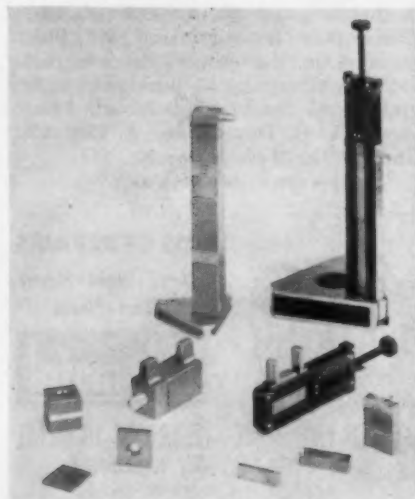
ROYAL
PRODUCTS

Write or call today for literature and price list on Royal Self-Releasing Collets, Handwheel Draw Bars, and Spring, Step, and Milling Machine Type Collets.

ROYAL PRODUCTS, 84 Union Street, Mineola, L. I., N. Y., Pioneer 6-4245

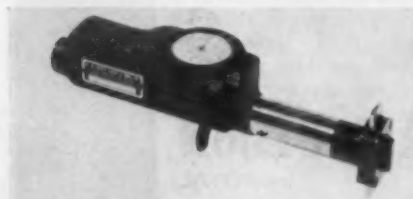
Use postpaid card. Circle No. 471

ASTE EXPOSITION . . .



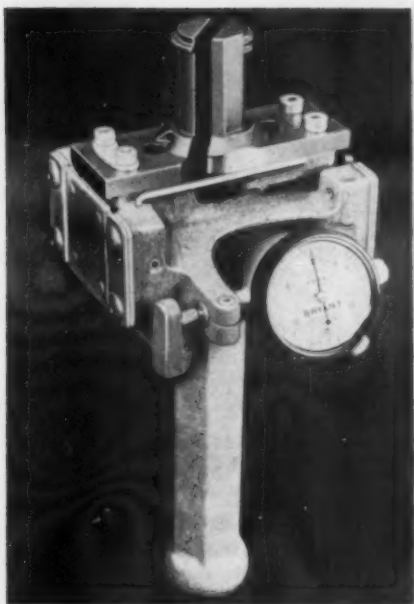
WORKING AND INSPECTION BLOCKS are said to give closer tolerances without increase of cost, and a decrease in some items. Both square and rectangular blocks and accessories in steel and tungsten carbide are offered. **Fonda Gage Co., Stamford, Conn. Space No. 2119.**

Use postpaid card. Circle No. 744



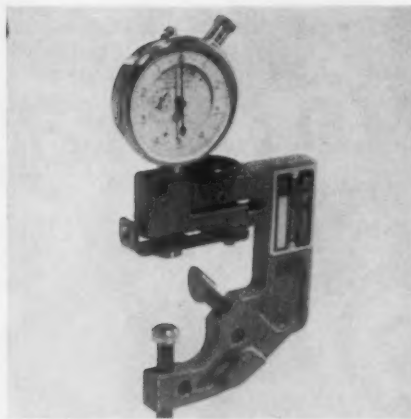
INTERNAL GROOVE DIAMETER GAGE for production gaging is reported to repeat to "tenths" under the most adverse conditions, making it an excellent gage for parts with close tolerances. The gage may be supplied for standard "O" ring and snap ring grooves with bores from .490 to 7.000 dia. **A. G. Davis Gage & Eng. Co., Hazel Park, Mich. Space No. 144.**

Use postpaid card. Circle No. 745



INTERNAL PITCH DIAMETER THREAD GAGE. Split plug-type thread segments for checking pitch diameter of internally threaded parts can be mounted on Bryant indicator-type thread comparators, either the B-21 bench or the P-21 portable. These segments are made to engage a single thread. This is accomplished with one thread on one segment and two threads with relieved outer flanks on the other segment. The major diameter is truncated one-quarter pitch. (Same as a "Not Go" plug.) The single thread engagement eliminates accumulation of lead error. Truncation of the thread minimizes angle error. Therefore, a true measurement of internal pitch diameter can be read on the dial indicator. Segments are available from stock for NC, NF, NEF threads through 1" and on application for most special thread sizes from 5/16" to 5". **Bryant Gage Div., Springfield, Vt. Space No. 123.**

Use postpaid card. Circle No. 746



ACRA-MENT DIAL INDICATING GAGES feature economy, flexibility, and high fidelity. All IE gages measure either I.D. or O.D. as will their matching set masters. The IE-500 series measuring pins can be set to measure to any depth to 2". Illustrated is a versa-

tility highlight of the SG-100 snap gage line—a bench stand base converts the gage to a bench comparator. **Sealol Corp., Providence, R.I. Space No. 130.**

Use postpaid card. Circle No. 747



HANDLES FOR PLUG AND RING GAGES. Gage handles made to the American Gage Design Standards from aluminum are highly polished to a brilliant luster. These handles are available in Taperlock, Trilock or Reversible Wire type styles. They are stocked in approximately 1/32" steps for minimum grinding and lapping. **Huron Machine Products, Inc., Dearborn, Mich. Space No. 127.**

Use postpaid card. Circle No. 748

Fast, Easy Cutting!

THE MILFORD® FLEXIBLE BACK HOOK TOOTH BLADE

Teeth with Positive Rake Angle bite cleanly into the work permitting unusually fast, free cutting of non-ferrous metals, plastic, wood and large easily-machined ferrous sections. Available in standard widths from 1/4" to 1", from 2 to 6 teeth per inch.

BUY FROM YOUR MILFORD DISTRIBUTOR . . . You'll save TIME, CUT BUYING COSTS and REDUCE INVENTORIES.



**POSITIVE
RAKE
ANGLE**



THE HENRY G. THOMPSON & SON CO.
Saw Blade Specialists for Over 80 Years
NEW HAVEN 5, CONNECTICUT

HACK SAW AND BAND SAW BLADES • HOLE SAWS • GROUND FLAT STOCK

Use postpaid card. Circle No. 472

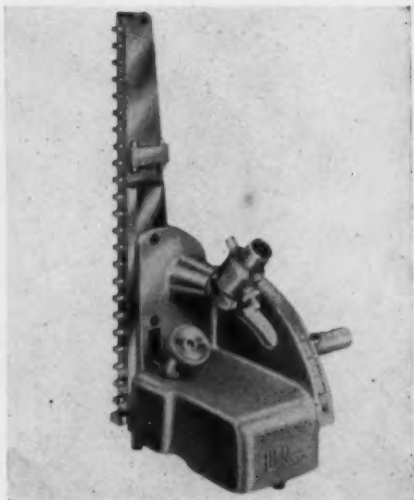
ASTE EXPOSITION . . .



A COMPLETE LINE OF GAGES AND COMPARATORS, for checking both internal and external screw-threads, together with accessories and attachments for checking the concentricity and squareness of related surfaces, will be exhibited. Pictured is the pivotal plug-snap thread comparator, Model JB-N. It is the bench type, for internal threads, in sizes No. 4 through 1½". **The Johnson Gage Co., Bloomfield, Conn. Space No. 304.**

Use postpaid card. Circle No. 749

WEBBER MICRO-ACCURATE OPTICAL HEIGHT GAGE is said to combine Webber gage blocks and the Leitz measuring microscope to give speedy, easy, accurate surface plate transfer of measurements. Fast measurements of heights to 61", with accuracies of $\pm .000005$ " per inch of height, are claimed. Settings of measurements to .000025" are read in the Leitz optical eye-piece, and are measured from the top of the protruding gage block corresponding to the inch of height being measured. According to the manufacturer, the height gage eliminates slow, tedious wringing together of many gage blocks to obtain long measurements,



with resultant uncertain accuracies. The height gage is available in four models, measuring to heights of 25", 37", 49", and 61". **Webber Gage Co., Cleveland, Ohio. Space No. 302.**

Use postpaid card. Circle No. 750



INDI-AC ELECTRONIC HEIGHT GAGE has a new Protector gage tip, which provides protection against blows from all directions—even head-on. Height gage is accurate to millionths

of an inch. An accidental blow, due to handling or mistake in setup, merely deflects the gage tip instead of transmitting the blow and damaging the gaging elements. Cleveland Instrument Co., Inc., Cleveland, Ohio. Space No. 953.

Use postpaid card. Circle No. 751



GAGING STAND FOR MANUAL GAGING APPLICATIONS. This compact gage, designated an M/C Comparator, is adjustable for amplifications up to 0.0004 full scale, as the result of an entirely new internal circuit. The stand is equipped with a $4\frac{1}{2}$ " diameter indicator with "dead-beat" action and cushioned return. Moore Products Co., Philadelphia, Pa. Space No. 1375.

Use postpaid card. Circle No. 752

TUMICO OPTIC VERNIER HEIGHT GAGE has an inwardly curved chrome reflector behind the glass scale which diffuses light and shows scale, vernier lines, and numbers on glass scales in sharp relief, thus helping to quickly and accurately read fractions of $1/1000$ ". The double length vernier is 2.450" long and adjustable. Accuracy of the setting may be checked with standard gage blocks. A differently designed H-beam

NEW DRILLING CONCEPT CUTS COSTS



Booth 1946
A.S.T.E. Show

with the new

JOHANSSON RADIAL DRILLING MACHINE

you can

- Bring tool to each hole location fast and accurately, by finger touch
- Select spindle speed instantly, without stopping motor
- Change tools in seconds with built-in automatic drill ejector
- Convert from drilling to a tapping machine in time it takes to turn a switch
- Drill, ream and tap holes on any compound angle just by tilting drill head

Gear drive to all spindle speeds, 60—3000 RPM. Drills up to 2" dia. Swings workpiece over 4 ft. high and over 4 ft. in diameter

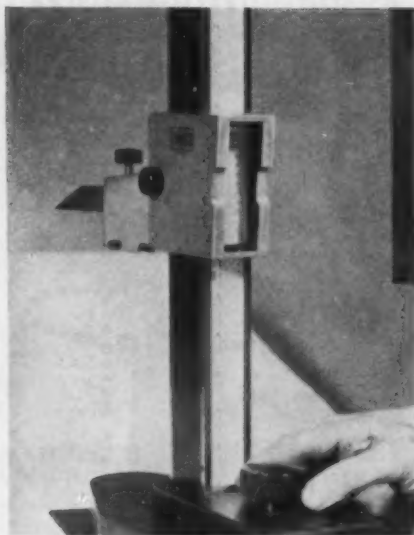
Write for literature today

I. O. JOHANSSON COMPANY

7249 ST. LOUIS AVE., SKOKIE, ILLINOIS

Use postpaid card. Circle No. 473

ASTE EXPOSITION . . .



prevents sway and vibration. **Tubular Micrometer Co., St. James, Minn. Space No. 445.**

Use postpaid card. Circle No. 753



ANGULARITY GAGE solves the difficult problem of measuring angle degrees on compound curves, such as those found on turbine blades, missile parts and valve bodies. User can obtain a series of direct readings to check

against a master. This results in faster, more accurate measurement of pieces that normally require many hours for thorough checking. **B. C. Ames Co., Waltham, Mass. Space No. 227.**

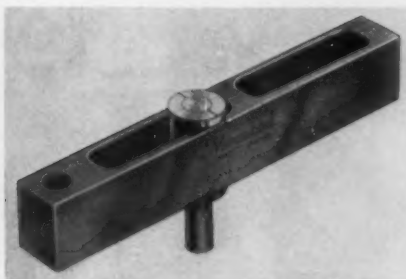
Use postpaid card. Circle No. 754



CEJ-MIKROKATORS are offered with selective measuring pressure, i.e., 1-10 ozs. and 1-40 ozs. The low measuring pressure of about one oz. is used when checking delicate parts, which would be subject to deformation under heavier pressure. **C. E. Johansson Gage Co., Dearborn, Mich. Space No. 418.**

Use postpaid card. Circle No. 755

FLUSH PIN GAGE is designed so that it is possible to make up the gage required from standard component parts. It is also designed so that it is possible to set the gage to the dimension required. Pins can be adjusted .250 inches for the smaller sizes, and .500 inches for the larger sizes. The range of one-half minimum to three and one-half maximum is covered by a set of only eight separate pin assemblies. Gage bodies cover a range from four inches minimum to ten inches maximum. Be-



sides being able to adjust the pin length, it is also possible to change the pin location in relation to the gage body. Gages are made completely of oil hardened tool steel, ground and lapped, parallel and square Rockwell C 62-65. Where it is necessary to check extremely close tolerances, there is available an indicator adapter. Colonial Mfg. Co., Inc., 600 Berkshire Ave., Springfield, Mass. Space No. 1169.

Use postpaid card. Circle No. 758



SCREW THREAD COMPARATOR is reported to be the fastest and most accurate method of measuring pitch

**SHALLOW HOLES...DEEP HOLES
DRILL THEM **FASTER,
ALL BETTER****

**WITH A
Commander**

DRILL CHIP BREAKER

- ✓ Small Chips Permit 50%—400% Increase in Drilling Speeds
- ✓ Drill 10 Diameters or More in Depth Without Clearing Drill
- ✓ Better, Smoother, More Accurate Holes

Reciprocating action of the Commander Drill Chip Breaker breaks chips into small pieces that travel up drill flutes . . . permitting higher drilling speeds . . . doubles and triples production of shallow OR deep holes. Long chips which cause drill breakage, scored holes, slow jig and fixture loading, are eliminated—small, easy to handle chips flow up out of hole continuously, permitting coolant to reach cutting edge of drill. Assures longer drill life, more holes per sharpening, more holes per hour. Your nearby **COMMANDER** Distributor has the Drill Chip Breaker and other Commander Production Tools.



Ordinary Chips



Chip Breaker Chips

Commander MFG. CO.

4227 W. KINZIE STREET • CHICAGO 24, ILLINOIS

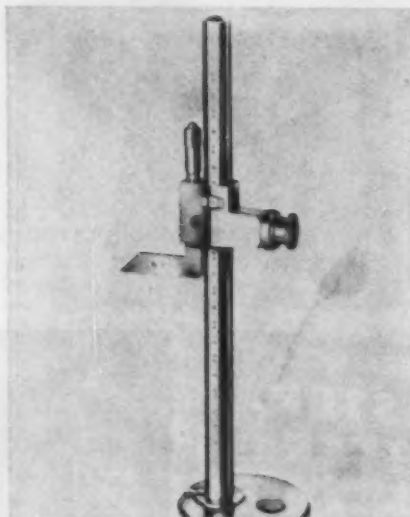
**Write FOR
CATALOG #851**
which describes Commander's
Production Tools

Use postpaid card. Circle No. 474

ASTE EXPOSITION . . .

diameter, and uses the familiar "3-wire" measuring principle. Setting is accomplished by the use of gage blocks, eliminating the need for set plugs. Variation in size can be observed on the indicator which is equipped with tolerance pointers. **O-Vee Gauge Co., Los Angeles, Calif. Space No. 2005.**

Use postpaid card. Circle No. 757



MICROBALL HEIGHT GAGE has absolute positive action controlled by indexing at .500" intervals, by means of hardened steel balls set in stainless steel column. Intermediate settings are made by operating micrometer gage, reading direct to within tolerance of .0005". **Foster Supplies Co., Chicago, Ill. Space No. 2001.**

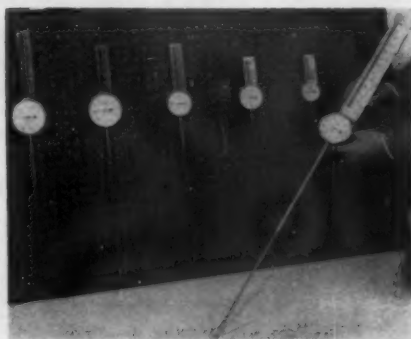
Use postpaid card. Circle No. 758

ECONO-CHECK MODEL 101, a machined-parts inspection tool, is reported to check to accuracy of indicator and setting gages used. It will check diameters from zero to capacity of unit,



and lengths from zero to capacity of unit. One to six dimensions may be checked on one unit—with special adaptors as many as ten dimensions. It is a compact portable unit. **William L. Riggs Co., Tulsa, Okla. Space No. 2007.**

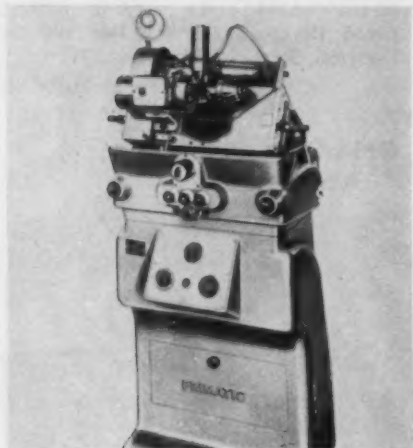
Use postpaid card. Circle No. 759



TYPE B LONG RANGE INDICATORS being unveiled at the show embody several new improvements. They will provide more accurate measurements on quality control jobs requiring close tolerance and inspection. **B. C. Ames Co., Waltham, Mass. Space No. 227.**

Use postpaid card. Circle No. 760

Gear Production Equipment



FRIMATIC GEAR CUTTER AND HOBBER handles work up to 1½" dia. by 1" length in any machineable material completely automatically. The

super-precision electronic gear cutter and hobber can produce gears with 120 teeth in the standard execution and for fine moduls up to 360 teeth by special order. It features constant automatic loading, automatic indexing and locking, rapid reversal of table and electronic preselection of cutter speeds up to 10,000 rpm in both directions. The machine is designed for automatic high speed production of small gears and pinions for standard and special tooth forms such as used in meters, watches, and precision instruments. **S & S Machinery Co., Brooklyn, N.Y. Space No. 1748.**

Use postpaid card. Circle No. 761

16" TYPE P400 HIGH SPEED GEAR HOBGING MACHINE, has featuring diagonal hobbing, fully automatic cycles and automatic chip removal, with automatic loading fixtures available. It is also completely universal, equipped with a combination hob head which permits

a
complete
broaching
service

plus...



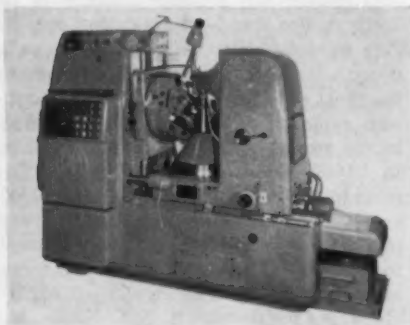
Conant offers complete engineering and manufacturing facilities for your broaching needs. Expertly designed for proper strength and chip carrying capacity. Prompt broach sharpening and reconditioning service. Order standard keyway broaches from our stock.

Your inquiry invited. Send us part prints for recommendation and quotation.

Conant BROACH COMPANY
347 W. 107th ST. CHICAGO, ILLINOIS

Use postpaid card. Circle No. 475

ASTE EXPOSITION . . .



tangential hobbing of worm gears in addition to the standard hobbing of spur gears and helical gears of every angle. When diagonal hobbing gears mesh, the crest lines of their flanks will cross, and this results in improved tooth contact and improved rolling properties. Pfauter Machine Co., Inc., Yonkers, N.Y. Space No. 1338.

Use postpaid card. Circle No. 762

Grinders, portable pneumatic

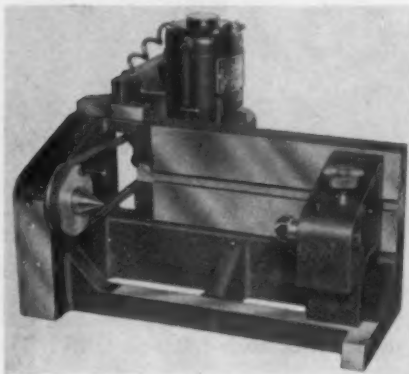


THE 1500 SERIES PNEUMATIC GRINDER is designed for a variety of metal grinding, sanding and wire-brushing operations. It offers compact, lightweight construction and ease of operation. Lever-type thumb-tip throttle provides effortless control of the tool without changing grip. A special muffler handle reduces noise and serves as an air exhaust, eliminating unnecessary holes in the grinder

casing. The basic tool is available in a variety of speeds and for several different wheel and guard mountings. Cleco Division, Reed Roller Bit Co., Houston, Texas. Space No. 1871.

Use postpaid card. Circle No. 763

Grinding Machine Attachments

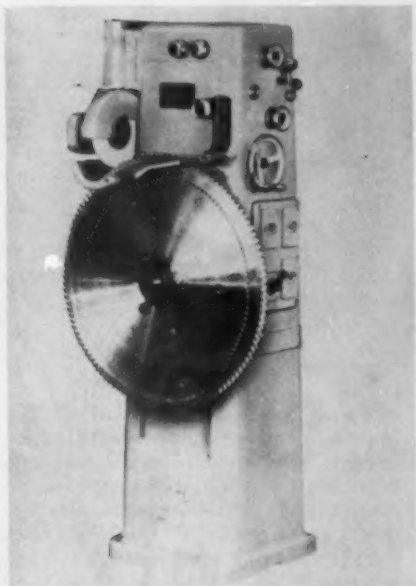


MOTORIZED CENTER UNIT, when used with surface grinder, makes possible concentricity and squareness accuracies of 50-millionths inch. The live center is mounted in a precision ball bearing and is driven by a 1/4-hp motor through a speed reducer. Center speed is 78 rpm. Attachment varies speed to achieve exact grinding speeds for different materials and diameters. Standard centers accommodate workpieces from 1 to 10 inches long; units for greater lengths can be obtained on special order. Maximum workpiece diameter is 7 inches. Price of unit, \$495. AA Gage Co., Detroit, Mich. Space No. 532.

Use postpaid card. Circle No. 764

Grinding Machines

TEMPO SAW BLADE GRINDER Models AS6, AS8, and AS10, for larger circular saws with solid or inserted



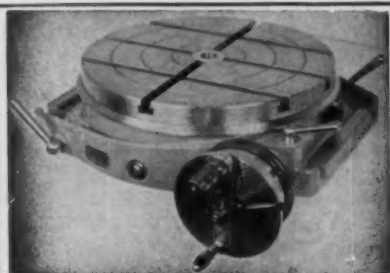
built around a planned drill point. The three models have ranges from .080" thru 1.250". Alina Corp., L.I., N.Y. Space No. 1914.

Use postpaid card. Circle No. 766

teeth, are making their first appearance in the United States. These machines are entirely dust protected, with an oil-tight gear box. If desired, an electric dust extractor may be installed in the base of the machine. Eight index speeds are available. Separate motors drive the grinding spindle and the gear box. Machine can be adjusted to grind straight or curved teeth by means of a shift lever. High and low teeth are produced automatically in one operation. The grinding spindle can be adjusted for chamfering the teeth. By using a master blade, close tolerances can be kept constantly. Cawi Machine Co., Inc., Jersey City, N. J., Space No. 972.

Use postpaid card. Circle No. 765

SELECT-O-POINT DRILL GRINDERS are designed for rapid and accurate grinding of: twist drills, step drills, spot facing cutters, keyway milling cutters, end mills, screw taps, reamers. Each drill grinder is a complete system



WALTER

PRECISION DIVIDING ROTARY TABLES

With & Without Dividing Discs

- READABILITY: 6 SECONDS.
- CONSTRUCTED FOR LONG LIFE.
- MAINTAIN PRECISION
- AVAILABLE IN 10", 12 1/2", 15 3/4", 19 3/4", 25", 31".

Also many types of Universal Precision Dividing Heads and Attachments for most economical production.

Test reports furnished with literature.

Sole Agents:

NEISE
MODERN TOOLS

KARL A. NEISE
404 4th Ave., Dept. MT,
New York 16, N. Y.

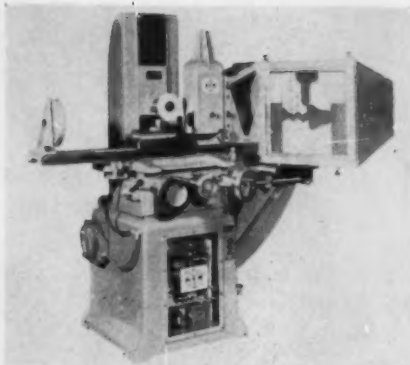
Use postpaid card. Circle No. 476



OSCILLATING 10" DUPLEX GRINDER. Combined with electrolytic grinding the Hammond SCE-10 Duplex Oscillator varies the stroke length from 0 to 1½" and the stroke frequency from 0 to 115 per minute. The SEC-10 carries a 10" diamond wheel. This machine has two tables mounted on ball bearing ways. Angular setting with hand wheels ranges from 10° above to 25° below horizontal with no movement of the table toward the wheel. **Hammond Machinery Builders, Inc., Kalamazoo, Mich. Space No. 1704.**

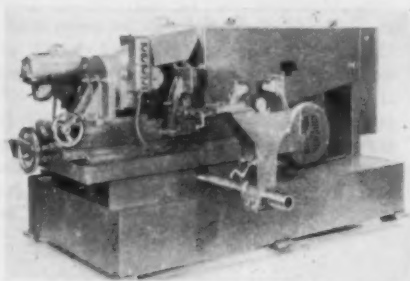
Use postpaid card. Circle No. 767

VG-3 VISUAL GRIND optical projection grinder has been improved through the addition of these features: continuous lubricating system; timer belt; 110 volt electrical control; closer tolerance downfeed control. Machine enables the form grinding of steel and tungsten carbide to precision tolerances without



stopping to consult a comparator. These improvements are said to facilitate continuous grinding and work inspection of intricate forms by through, blind and combination grinding methods. Since this is accomplished by projection of the workpiece on a ground glass viewing screen with magnification systems ranging from 10:1 to 100:1, and the workpiece is ground and simultaneously inspected on the viewing screen enlargement, the downfeed control in the new grinder is graduated to tenths. **Cleveland Grinding Machine Co., Cleveland, Ohio. Space No. 838.**

Use postpaid card. Circle No. 768



MODEL NO. 8132 6" CENTERLESS ABRASIVE BELT GRINDER is designed for high-speed precision grinding and finishing of rod or tube stock at through-feed rates of from 4" to 40'

per minute. A major feature of the new model is its work capacity: the through-feed fixture, equipped with work rest and guide blades. The wet-or-dry belt model claims accuracy to .0003" t.i.r. Engelberg Huller Co., Inc., Syracuse, N.Y. Space No. 1604.

Use postpaid card. Circle No. 799

HERMINGHAUSEN CENTERLESS GRINDERS, Models SR-1, SR-2, and

SR-15/2, have nominal grinding capacities of 1", 1½", and ¾". The grinding wheel spindles are carried in precision taper roller bearings and the feed regulating wheel slides are carried in roller slides, thus eliminating sliding friction and promising a high repeat-accuracy. The machines feature individual diamond dressers for the grinding wheel and the feed regulating wheel; the latter operates in such a way that the feed regulating wheel is being dressed exact-

HISEY
SO MUCH
QUALITY
FOR SO LITTLE COST

Low cost and high quality continue to typify the Hisey line as they have for fifty years. Hisey is the veteran company of grinder, buffer and polisher manufacturers . . . making both general purpose and heavy duty lines. Write today for full information.

OF CINCINNATI

Infinitely Variable Speed Buffer 1 to 15 HP

3 JA Drill Grinder with one drill holder

Pedestal Grinders — 10", 12", & 14" ½ to 5 HP

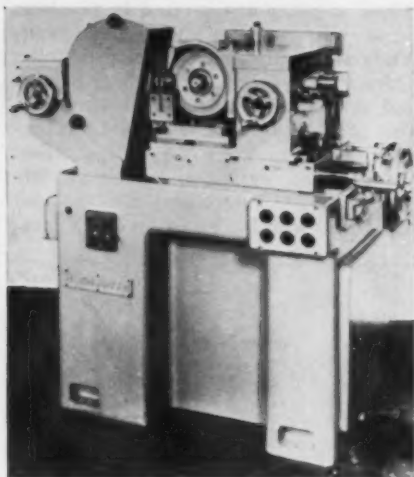
Precision Grinder ½ to 10 HP 4" to 20" Wheels

Hisey
THE HISEY-WOLF MACHINE CO.
364 MT. HOPE AVE.
Cincinnati 4, Ohio

The Hisey Line is THE COMPLETE LINE of Bench, Pedestal, Snagging, Wet and Dry, Disc and Drill Grinders . . . and famous Hisey Dust Collectors.

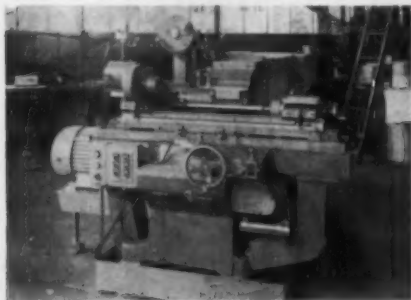
Use postpaid card. Circle No. 477

ASTE EXPOSITION . . .



ly at the line of contact between the feed regulating wheel and the work-piece. Dressing can take place after the feed regulating wheel has been inclined to control the feed rate and swiveled to control the taper. Eric R. Bachmann Co., Inc., Long Island City, N.Y. Space No. 704.

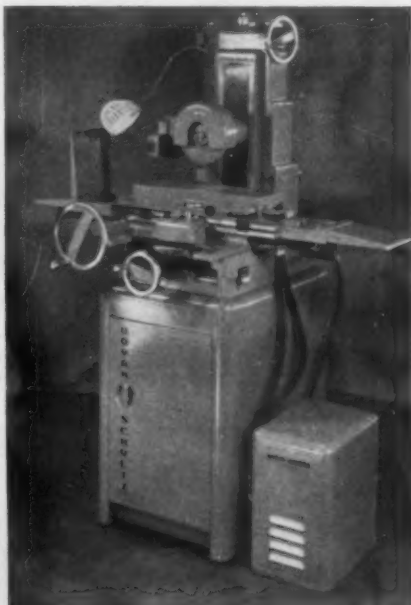
Use postpaid card. Circle No. 770



CYLINDRICAL GRINDING MACHINE, using coated abrasives, will handle work up to 18" long and to 4" dia. The wheel head has a heavy taper nose spindle

which will take contact wheels up to 6" wide, 16" dia. The standard idler backstand equipment is used, permitting the use of belts 168" long. The reversing and traverse speed is electronically controlled with push button station. Production Machine Co., Greenfield, Mass. Space No. 1811.

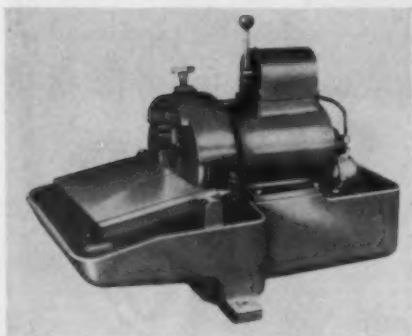
Use postpaid card. Circle No. 771



6-18 HYDRAULIC SURFACE GRINDER is equipped with hydraulic longitudinal feed. Price \$1795. Boyar-Schultz, Broadview, Ill. Space No. 1539.

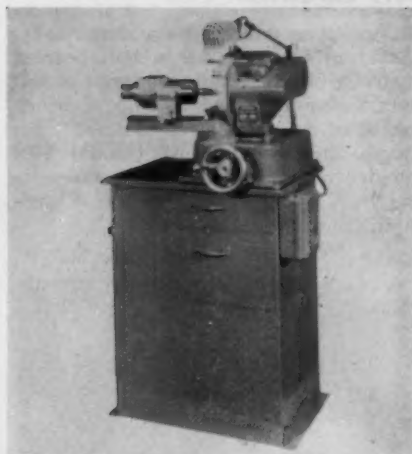
Use postpaid card. Circle No. 772

GF-2A BENCH TYPE CARBIDE GRINDER was developed to provide an efficient means of utilizing Wickman-Neven steel bonded diamond wheels and other metal bonded diamond wheels for off hand grinding. It has a built-in pump which provides an ample flow of coolant. Two wheel guards are provided with this machine, one to be used



with diamond wheels and the other for abrasive wheels. The table can be inclined from 15° positive to 5° negative angle and can also be adjusted horizontally. The Wickman Manufacturing Co., (Oak Park) Detroit, Mich. Space No. 1405.

Use postpaid card. Circle No. 773

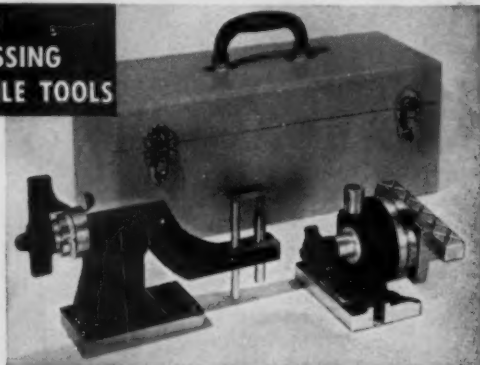


CHAMFER GRINDER Model 1400 has replaced conventional slides with a dust sealed trunnion action for feeding the 6"

Now ANGLE TANGENT TO RADIUS WHEEL DRESSING WITH NEW VERSATILE TOOLS

**MIGHTY GOOD AT ANY PRICE
BUT TOPS AT ONLY \$149.50**
(Both tools including diamonds)

The G-5 RADIUS DRESSER is a precision engineered tool that will dress either a convex or a concave radius from .015" to 1.750" on a 7 inch or 10 inch wheel, and it may be set to the exact radii desired. Graduated stops allow you to dress any desired portion of a radius. The spring tension journal insures chatter free operation. The G-2 ANGLE DRESSER AND TOOL HOLDER is actually two tools in one, having an easy to read vernier scale 0° to 180° giving accuracy within 2" of 1°; an excellent time saver to set up small jobs to be milled, drilled, tapped, etc., on any desired angle.



Our fixtures will dress most radii and angles tangent to each other, similar to those shown below.

FREE handsome, wooden storage box.
Write for complete information.

Distributorship available in select territories.

ROTHFUSS TOOL COMPANY

BOX 2694, ELMWOOD STATION

PROVIDENCE 7, R. I.

Use postpaid card. Circle No. 478

ASTE EXPOSITION . . .

dia. grinding wheel. A standard $\frac{1}{2}$ hp, 1725 rpm motor drives a ball bearing cartridge type spindle through a flat belt. Grinder is available as a bench machine or with steel cabinet floor stand. Illustration shows Model 1400 grinder with Size K chamfer sharpening head. **Henry P. Boggis & Co., Cleveland, Ohio. Space No. 1058.**

Use postpaid card. Circle No. 774



MODEL D6-1 SURFACE GRINDER obtains outstanding accuracy and surface finish, according to the announcement, eliminating the necessity of repeated grind and measure procedures. Step grinding to finish dimensions now is practical through use of accurate machine controls. **The DoAll Co., Des Plaines, Ill. Space No. 604.**

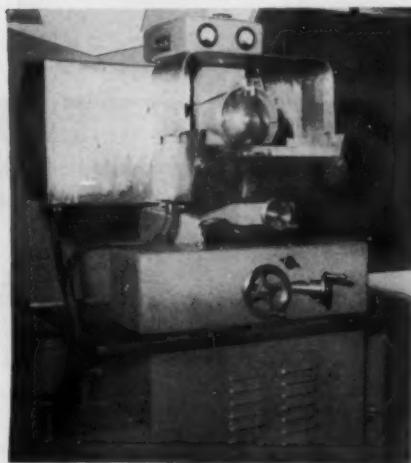
Use postpaid card. Circle No. 775

ASTRA HYDRAULIC SURFACE GRINDER, 10"x24", features special wheel balancer and adjustment on the wheel mounts. These devices allow the operator to adjust the work to the highest degree of accuracy and finish. There are hydraulic power feeds for table and in spindle head, rapid trav-



erse, mist coolant system. **Graham Machine Tool Co., N.Y., N.Y. Space No. 1721.**

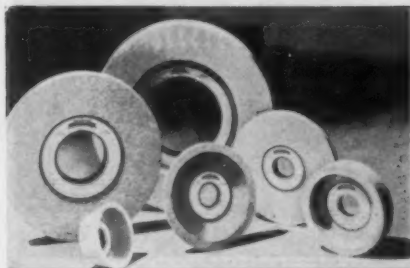
Use postpaid card. Circle No. 776



ELECTROCHEMICAL MACHINE TOOL, H-2, has the advantage of low diamond wheel wear, with an estimated wear rate of 1/10 that of conventional grinding. There is reported a complete elimination of tool rejection due to thermal cracking. The process is inherently cool. **Everite Machine Products Co., Philadelphia, Pa. Space No. 134.**

Use postpaid card. Circle No. 777

Grinding Wheels



SA BOROLON GRINDING WHEEL makes use of a new, friable aluminum oxide abrasive grain in its manufacture. Because this grain is produced in single crystal form without crushing, it is said to be free of the inner stresses and strains to which conventional white aluminum oxide abrasive is subjected. Each abrasive particle contains multiple cutting edges over its entire surface. This new abrasive is proving ef-

ficient for use in vitrified bonded grinding wheels for precision work. **Simonds Abrasive Co., Phila., Pa. Space No. 312.**

Use postpaid card. Circle No. 778

Hardness Testing Equipment



ROCKWELL HARDNESS TWIN-TESTER, a combination normal and superficial instrument, measures hard-

Now...



Write for
complete
details

**THE MOST
RUGGED
and Most Accurate
HEIGHT GAGE MADE!**

Delicacy or fragileness no longer need be associated with accuracy! The new **PROTECTOR Gage Tip*** provides complete protection against **BLOWS FROM ALL DIRECTIONS**—even head-on—and the Cleveland **INDI-AC Electronic Height Gage** still remains accurate to **MILLIONTHS** of an inch.

An accidental blow, due to handling, or mistake in set-up, merely deflects the Gage Tip instead of transmitting the blow and damaging the gaging elements.

Only available on new Cleveland **INDI-AC Electronic Height Gages**—or as a replacement for standard tips on **INDI-AC'S** now in service.

*Patent Applied For

Cleveland **INSTRUMENT COMPANY**

735 Carnegie Avenue

Cleveland 15, Ohio

ASTE EXPOSITION . . .

ness of metals and alloys of all types, whether hard or soft, polished or unpolished, round, flat, tubular or irregular in shape. Large direct-reading dial gage has one zero-set position which is marked with four scales: B and C to indicate Rockwell hardness and N and T to indicate Rockwell superficial hardness readings. Unit's vertical capacity is 8, 12 or 16 inches, and its throat depth is 5½ inches. Price approximately \$800, depending upon accessories required. **Wilson Mechanical Instrument Division, American Chain & Cable Co., Inc., Bridgeport, Conn. Space No. 309.**

Use postpaid card. Circle No. 779

PORTABLE METAL HARDNESS TESTER affords fast, easy, direct readings, corresponding to Rockwell or Brinell scales. The tester is taken to the job, not the job to the tester. A direct reading can be made in seconds



merely by placing the tester on the metal, pressing the handgrips down and reading the dial. The tester is used on a wide range of metal parts or products, thick or thin section, flats or rounds. Furnished with diamond penetrator and one test block. **Newage Industries, Inc., Jenkintown, Pa. Space No. 2104.**

Use postpaid card. Circle No. 780

Tosco Way Curtains FOR MACHINE TOOL BEDS



Protects ways and screws on boring mills, Kellers, grinders, etc. Keeps chips and abrasive dirt out of ways, and moving parts—Prolongs life of machine, saves costly repairs and overhaul time.
Roller constructed of seamless steel tube with special long life springs. Curtain is of neoprene fiberglass material impervious to oil and cutting compounds.

3 standard sizes
Special sizes to order

TOOL SUPPLY CO.
40 CUSTER ST. DETROIT 2, MICH.

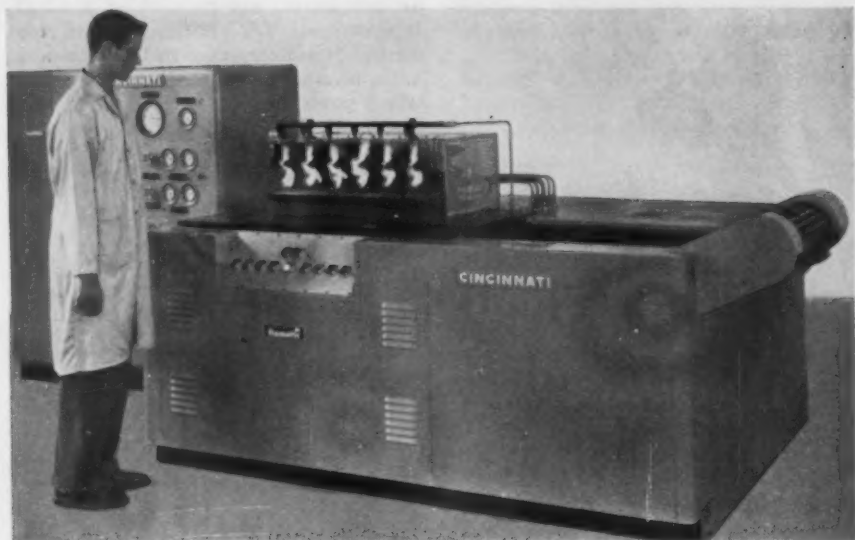
Use postpaid card. Circle No. 481



DEEP AND OFFSET MICROSCOPE has been designed to be used with the deep and offset Brinell hardness tester. The deep reading microscope reaches the spot to be tested easily and effectively. It can be supplied with or without built-in light. **King Tester Corp., Phila., Pa. Space No. 437.**

Use postpaid card. Circle No. 761

Heating Machines



FLAMATIC FLAME HEATING MACHINE, embodying the building block principle of construction, is of functional, flat bed design having a large, flat open area on which any of a wide variety of flame heads and work handling fixtures can be mounted. The show machine is simultaneously spot-hardening the cup and pad sections of automotive rocker arms, six at a time. The heating cycle is automatic, with

parts being dropped into the quench tank below the fixture at completion of the cycle. Constant quenching conditions are assured by the large volume of the tank, high capacity heat exchanger and automatic quench agitation system. A built-in conveyor removes finished parts from the quenching medium. **Meta-Dynamics Division, The Cincinnati Milling Machine Co., Cincinnati, Ohio. Space No. 1555.**

Use postpaid card. Circle No. 782

LOADED WITH FEATURES TO CUT PRODUCTION COSTS

"QUICK ACTION," no cumbersome wrench, "RUGGED" for long life, "RIGID" for fine finishes, "ADAPTABILITY" for the hard to hold jobs, "RANGE" for the extra capacity you need, "SAFE" because they hold securely, "LOW PRICED" to stretch your budget.



"GEM" MACHINE VISES

MADE IN EIGHT CONVENIENT SIZES
Vise Shown—

Jaws 4-3/4" wide, 1-3/4" deep, opens 4"
Plain Vise \$51.00, with Swivel-base \$64.00
Your local distributor can supply YOU.

J. E. MARTIN MACHINE CO.

"Since 1912"

548 W. State

Springfield, Ohio

Use postpaid card. Circle No. 482

ASTE EXPOSITION . . .

Hoists



MASTER POWER NO. 105 AIR-POWERED HOIST, will be available in 1000 lb. and 2000 lb. load-lifting capaci-

ties, with options of either roller type or link chain, and manual or pendant type controls. The lift, descent, and stop control is entirely new in that it eliminates levers, valve stems, and other external parts subject to damage. **Master Pneumatic Tool Co., Inc.**, Bedford, Ohio. Space No. 1271.

Use postpaid card. Circle No. 783

Honing Machines



MODEL HM HONING MACHINE is said to reduce honing time and produce more parts per set of stones than can be done on a mechanically operated machine. Hydraulically operated, it claims to maintain constant cutting pressure on the stone at all times. The dial indicator shows the part coming into size. **Superior Hone Corp.**, Elkhart, Ind. Space No. 1670.

Use postpaid card. Circle No. 784

free!

1957

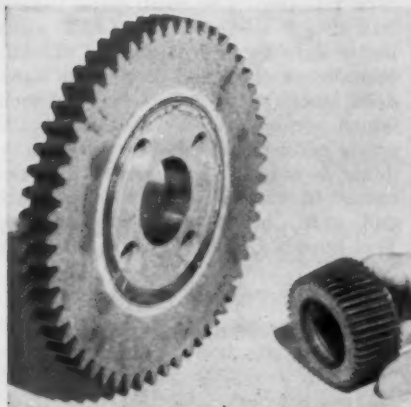


32 NEW and improved
TIME SAVING
TOOLS AND METHODS
FOR THE
MACHINE AND TOOL
INDUSTRY

MONTGOMERY & CO., INC.,
72 TICHENOR LANE • NEWARK 2, N. J.
MAIL READER SERVICE CARD TODAY FOR YOUR COPY

Use postpaid card. Circle No. 483

RED RING GEAR TOOTH HONING TOOLS, for performing hard-gear tooth finishing operations on spur or helical external and internal gears, will be displayed for the first time at the ASTE Tool Show. These abrasive-im-

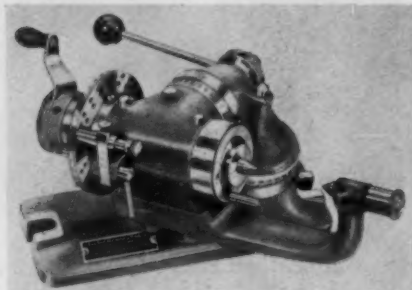


pregnated, plastic, gear-shaped honing tools improve sound characteristics of hardened gears by removing nicks and burrs, improving surface finish and making minor tooth shape corrections. They will be displayed in a variety of pitches and diameters to illustrate the

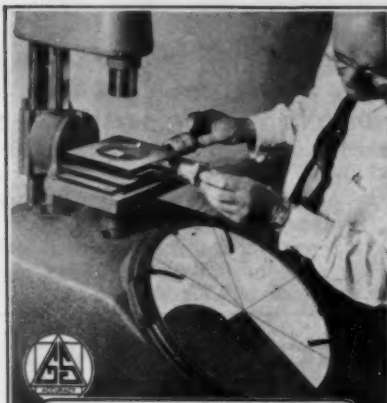
wide variety of gears that can be hard-finished with this type of tool. Samples of many kinds of gears finished by honing tools will also be shown. National Broach & Machine Co., Detroit, Mich. Space No. 922.

Use postpaid card. Circle No. 788

Indexers



"ALL TOOL" COMPOUND ANGLE COLLET INDEXING AND GRINDING FIXTURE is designed for flat any cy-



BASIC PRICE . . . \$395.00

**SCHERR PRECISION
COMPARATOR CHARTS**

OVERLAY and REPLACEMENT STANDARD CHARTS are carried in stock.

SPECIAL CHARTS made up to your specifications.

GEO. SCHERR CO., Inc.

INSPECTION BY PROJECTION

with the **NEW SCHERR MICRO PROJECTOR** with the **VERTICAL DESIGN**

**NEW IMPROVED
Self-Contained MODEL**

featuring

Rigid Floor Base — eliminating extra charge for table

Tilting Stage for Helix, Angles and Bevels

4" Dia. Stage Opening
14" Diameter Screen

Column Slide adjustable for wear by means of gibs. Will hold square indefinitely.

Custom made Precision Coated Lenses and double condensers for different objectives 10 to 190X magnification.

Surface Illuminator can be added anytime.

An entirely new practical designed tool for Inspection Department and Production Shop.

WRITE FOR ILLUSTRATED FOLDER — CODE GIJUY

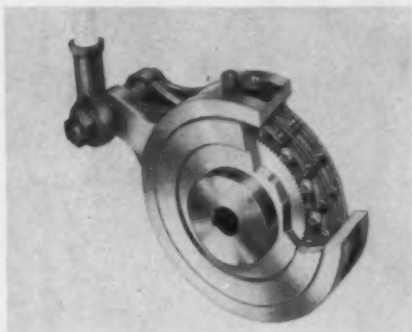
200-MT LAFAYETTE ST. • NEW YORK 12, N.Y.

Use postpaid card. Circle No. 484

ASTE EXPOSITION . . .

lindrical grinding, light milling, drilling, etc. The spindle runs concentric within .0002". It takes standard 5C Hardinge collets, and has 1-1/16" collet capacity. Eastern Machine and Tool Co., N.Y., N.Y. Space No. 431.

Use postpaid card. Circle No. 786



SELECTO-O-MATIC INDEXER claims to give extremely close feeding on any

You CAN Resharpen High Speed Band Saw Blades "TEMPO"



The new universal automatic saw blade grinding machine for generating straight or curved teeth without depending on the shape of the grinding wheel. For circular saws, power hack saw blades, and **HIGH SPEED STEEL BAND SAW BLADES.**

See this machine
Booth 972 ASTE
Show, Philadelphia.

CAWI MACHINE CO., INC.

34 Exchange Place Jersey City 2, N.J.

Use postpaid card. Circle No. 485

type roll feed. The multi-pawl indexer will divide the circle into 6,720 equal increments through a system of compounded ratchets and pawls. The hardened steel ratchet wheel has 210 teeth which are engaged by a double set of pawls consisting of 16 per set. The indexer is only 5 3/4" in outside dia., and comes in standard duty, heavy duty, and extra heavy duty sizes. **Durant Tool Supply Co., Providence, R.I. Space No. 2025.**

Use postpaid card. Circle No. 787

Indexing Machine Chassis



INDEXING MACHINE CHASSIS, both turret and straight line types, will be exhibited. The new Series M makes available a standard tool mounting plate that travels up and down, completing one vertical cycle during each index cycle of the turret. It can also

JIG BORING to your specification

At your disposal: Our sub-contract jig boring department, one of the best equipped in the East.

A. K. TOOL CO., INC.

Route 22, Mountainside, N.J.
Telephone ADams 2-7300

Use postpaid card. Circle No. 486

MACHINE and TOOL BLUE BOOK

be furnished with a continuously rotating vertical camshaft projecting through the stationary center plate of the turret. Turret diameters range from 36" to 54". Swanson-Erie Corp., Erie, Pa. Space No. 1575.

Use postpaid card. Circle No. 788

Jigs & Fixtures

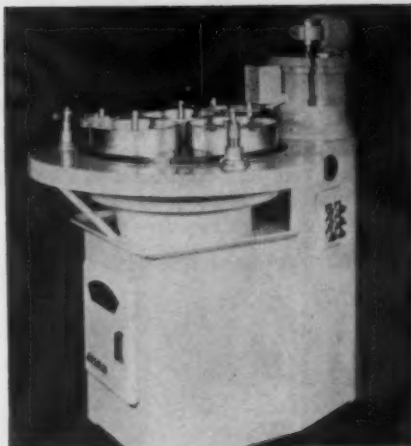
JIG AND FIXTURE COMPONENTS.

A one-piece construction ball will be shown for the first time at this manufacturer's booth. Diameter of ball or shank within plus or minus .0002. Concentricity of ball and shank plus or minus .0002. Any compound setting is claimed to be easier with these construction balls. Carr Lane Mfg. Co., St. Louis, Mo. Space No. 1066.

Use postpaid card. Circle No. 789

Lapping Machines

GYRO-MATIC 24 LAPPING MACHINE features an advanced design



work holder. High production is reported in piece parts to 1 light band (.0000116) or less, ultra precise finishes which measure to millionths of an inch, and continuous high volume output. In all lapping and finishing operations,

FULL DISPLAY APEX TOOLS, CUTTERS

SEE THEM AT BOOTH 509, ASTE SHOW, PHILA., MAY 1-8

APEX Milling Cutters are made for thin slotting or heavy duty work. All are made with our DROP FORGED, serrated blades, adjustable for wear with minimum grinding.



Thin, Alternate-Angle Cutter

Free cutting, for slots and keyways. Any width from 3/16" diameters from 3" up. Drop-forged blades, adjustable to maintain width if desired. Also made with full radius, and in interlocking style as well.

Cutters for facing, slotting, straddle milling or ganging and multiple operations can be had with drive to suit.



Shown at left is one of the famous Apex shankless, adjustable, serrated single-point tools. Holders are available for every metal-removing job — with numerous tool bits to choose from.

THE APEX TOOL & CUTTER CO.

Shelton 14, Conn.

*Original Mfr. of Serrated
Holders and Tools*



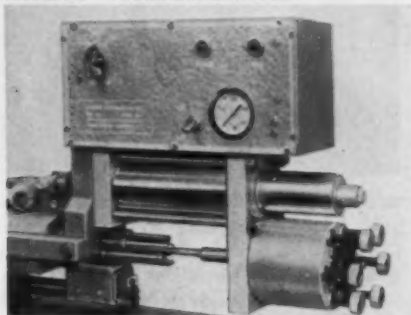
Use postpaid card. Circle No. 487

ASTE EXPOSITION . . .

piece parts are retained and guided for best lapping action. Construction of the work retainer rings, coupled with their rotating movement, constantly applies a truing action to the lapping plate. Spitfire Tool and Machine Co., Chicago, Ill. Space No. 1638.

Use postpaid card. Circle No. 790

Lathe Attachments



GRAYMILLS Mist Coolant Systems



153

"The Best in Mist"

Precise air and fluid controls, corrosion proof. Translucent containers let you see the liquid level. Write for new folder.

GRAYMILLS CORP.

3721 N. Lincoln Ave.
CHICAGO 13, ILLINOIS

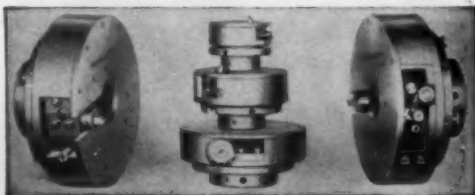
Use postpaid card. Circle No. 488

MODEL HR-2 SANDEX TURRET LATHE CONVERTER, fully automatic, self-indexing, is a compact, packaged device which is reported to give greater production and improved quality. It features individually controlled feeds for each turret position with infinitely variable feed adjustments. It improves hourly rate output by consistent mechanical cycling. Power is by air, and control by oil. The Sandex Automation, Inc., Brooklyn, N.Y. Space No. 1934.

Use postpaid card. Circle No. 791



MIMIK 5000 TURRET LATHE UNIT, in three groups or sizes, features a two-way micrometer positioning of the template, rather than the valve, for cut adjustment, and lengthwise as well as rotary positioning of the feed back arm. All adjustments for depth of cut are with the lightly loaded member (valve or template), never with the tool bit or tool slide. The universal positioning of the slide is the unit's most outstanding feature, apart from the extreme accuracy of its tracer valve, and it provides the operator with almost



MUMMERT-DIXON CO. 122 Philadelphia St., Hanover, Pa.

MUMMERT-DIXON FACING HEADS with Automatic Feed

One-way Tool Feed—8, 9 and 12" sizes.

Two-way Tool Feed—9, 12, 16, 20, 24, 30, 36, 40 and 46" sizes. Save many costly set-ups.

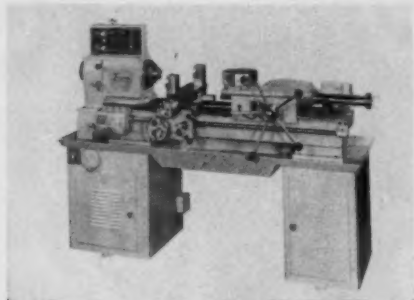
Bulletin No. 4141 Gives Full Details

Use postpaid card. Circle No. 489

unlimited choice in his set-ups to get the most of machine, tracer, and cutting tool, according to the announcement. Retor Developments Ltd., Galt, Ont. Space No. 2018.

Use postpaid card. Circle No. 792

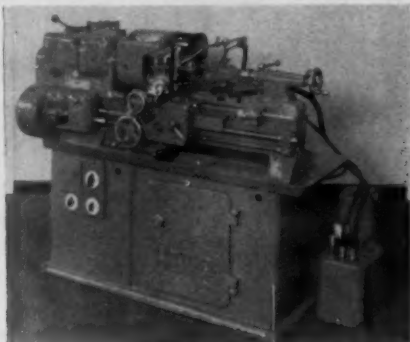
Lathes



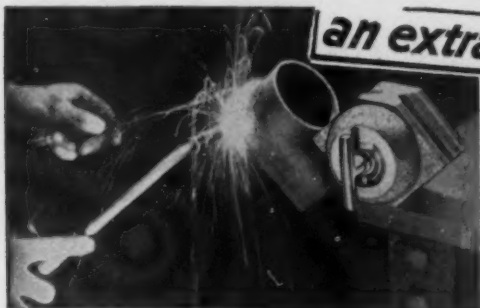
14" AUTOMATED TURRET LATHE, with 1½" spindle hole, is designed for short or long production runs. It is

powered by a two-speed reversing motor with variable-speed drive. Turret feed is driven by a DC motor with rapid travel, giving a wide selection of set-ups. Logan Engineering Co., Chicago, Ill. Space No. 625.

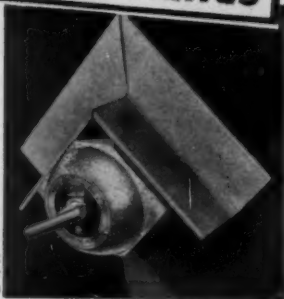
Use postpaid card. Circle No. 793



11" HYDRAULIC COPYING LATHE. A turn of a switch changes this lathe



an extra pair of hands



An extra pair of hands, six magnetic faces for holding pipes, bars, angles, plates or sheets, operated by the turn of a handle, suitable for use in connection with all classes of welding.

MAGNETIC HOLDER

For descriptive literature and address of sales agent in your area write to—

JAMES NEILL & CO. (U.S.A.) LTD.

37-39 PEARL ST. NEW YORK 4

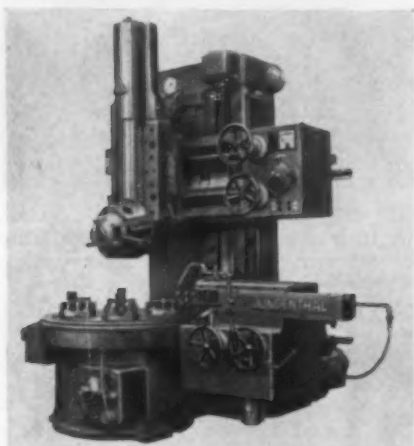
MADE IN SHEFFIELD · ENGLAND BY JAMES NEILL & CO. (SHEFFIELD) LIMITED

Use postpaid card. Circle No. 490

ASTE EXPOSITION . . .

from duplicating to standard operations without removing or adding parts. The copying unit is built into the rear of the lathe, leaving normal lathe operations unrestricted. The first workpiece can be produced on standard operations, then used as a master for duplication. Parts may be duplicated from either flat or round templates. **T. S. Harrison & Sons Ltd., England. Space No. 1456 and 1470.**

Use postpaid card. Circle No. 794



VERTICAL TURRET LATHE, Jungenthal Type DKE 1200 with side head, features a system of roller and ball

bearings guaranteeing a true running of table from .00012" to .0002", and permitting workpieces of unlimited weight to be machined on it. Machine is made with 40", 55" and 60" tables, and is available in high speed ranges up to 355 rpm. **Barer Engineering & Machinery Co. Ltd., Champlain, N.Y. Space No. 1370.**

Use postpaid card. Circle No. 795



ZWM-46P HAND TURRET LATHE, high speed, second operation, features pushbutton variable speed drive, providing spindle speeds of 40 to 2,000 rpm, 13" swing over bed, 6 1/4" swing over cross-slide, 6 1/2" stroke of turret, and 1-1/16" spindle collet capacity. **Sheldon Machine Co., Inc., Chicago, Ill. Space No. 724.**

Use postpaid card. Circle No. 796

CLOSED

TRADE MARK

AUTOM

CLOSED

PLAIN TYPE

CONTINUOUS HINGES

AUTO MOULDING & MFG. CO.

1110 E. 87TH ST.

CHICAGO 19, ILL.

OFFSET TYPE

THREE-FOURTHS OFFSET

SEMI-OFFSET

OPEN

All hinges shown can be furnished with special holes, cutouts and bends to blue-print in metals to suit the job.

SPECIFICATIONS

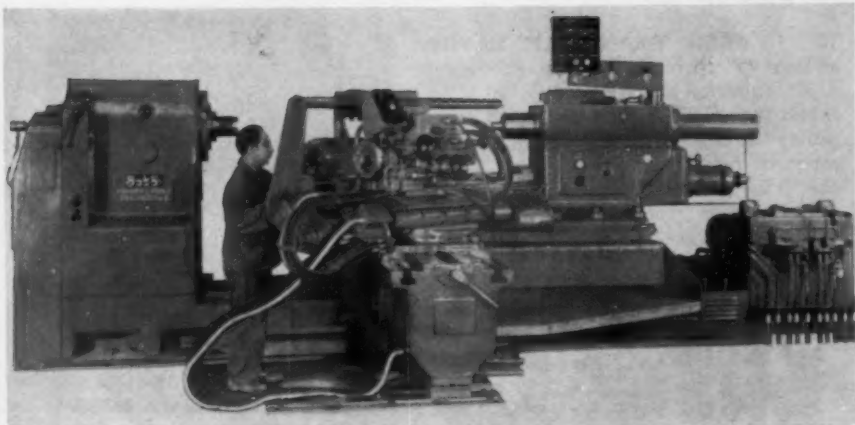
Open width 1/8" to 6"

Gage Material .040 to .135

Pin Diameter .101 to 1/4"

Lengths to 120"

Use postpaid card. Circle No. 491



BOKOE SPINNING AND FLOW-FORMING LATHE, Model P111B, universal machine for spinning, flow-forming or both is fully automatic and hydraulically operated with templet or wall-thickness controlled compound

movements. The 36,000 lb. lathe has been used in Europe for spinning and flow-forming searchlight housings and torpedo shells. **Kurt Orban Co., Inc.**, Jersey City, N.J. Space No. 1205.

Use postpaid card. Circle No. 797



FLANGING MACHINES and CIRCLE SHEARS

No. 1 10 Ga. Circle Shear and Flanger.

No. 3 1/4" Cap. Flanger for flat heads.

No. 4 3/8" Cap. Flanger for flat and dished heads.

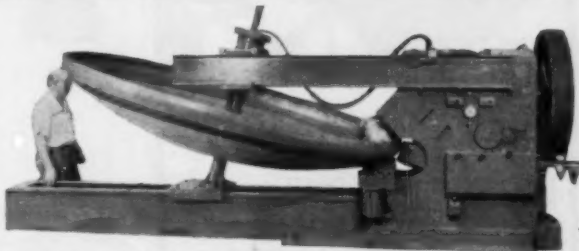
No. 5 1/2" Cap. Flanger for flat and dished heads.

No. 6 5/8" Cap. Flanger for flat and dished heads.

No. 56 Model 3/16" Cap. Elliptical Head Shear and Flanger.

No. 60 3/8" capacity circle shear with a 23" throat.

No. 30 3/16" capacity circle shear with a 15 1/2" throat.



Above machine a No. 7. 3/4" capacity. Shown with a 1/4" x 9" 6" dia. stainless steel head with a 6 1/2" knuckle radius. Can go up to as high as an 8" knuckle radius.

BLUE VALLEY MACHINE & MFG. CO.

6832 Truman Road KANSAS CITY 26, MO.

Use postpaid card. Circle No. 492

ASTE EXPOSITION . . .

16" GEARED HEAD GAP LATHE swings 25" through the gap, providing great capacity and flexibility. A 5 hp motor transmits power to the main drive pulley through five vee belts. Adjustment of belt tension is possible while the lathe is running. Available in 12 or 24 speeds from 32-1000 rpm. The unusually large hole of 3-1/16" diam.



GEARS

In Stock—Immediate Delivery

Gears, speed reducers, sprockets, thrust bearings, flexible couplings, pulleys, etc. A complete line is carried in our Chicago stock. Can also quote on special gears of any kind. Send in your blueprints and inquiries.

Send for Complete Catalog No. 18
CHICAGO GEAR WORKS
440-50 N. Oakley Blvd., Chicago 12, Ill.
Use postpaid card. Circle No. 493



**The
HEIMANN
MAGNETIC**

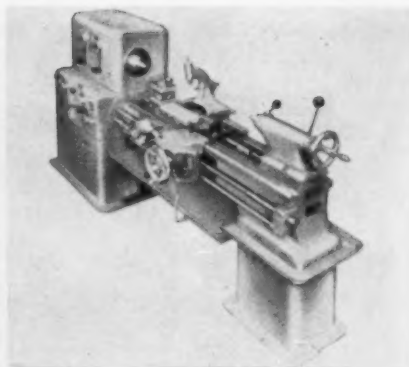
**CHIP
REMOVER**

THIS HAND IS IN THE CHIPS! Yes, and the chips are not in your eyes or hair or ways of machines. The Heimann Magnetic Chip Remover gets chips out of blind holes rapidly, cleanly, safely. It's a lastingly efficient, permanent magnet in a knurled aluminum holder. Send it in after chips and it comes out covered with them.

YOU CAN'T AFFORD to be without it! A natural for your tool box or crib. Made 1/8" to 1/2" sizes, at a price to attract. Write now for circular.

**HEIMANN MFG. CO.,
URBANA, OHIO**

Use postpaid card. Circle No. 494



through the spindle, provides increased capacity. **T. S. Harrison & Sons, Ltd.,** New York, N.Y. Spaces No. 1456 & 1470.

Use postpaid card. Circle No. 799

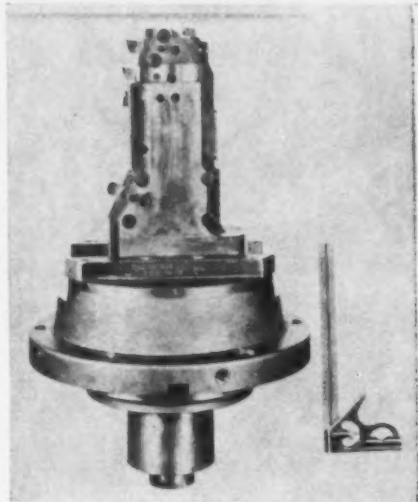
Lighting Equipment



INCANDESCENT LAMP Model 603 gives high-intensity lighting, using a 60-watt bulb, without discomfort. Air flowing between the inner reflector and outer housing carries off heat. The shade is always safe to handle. Universal base may be clamped or screwed to any surface. **Dazor Mfg. Corp.,** St. Louis, Mo. Space No. 1675.

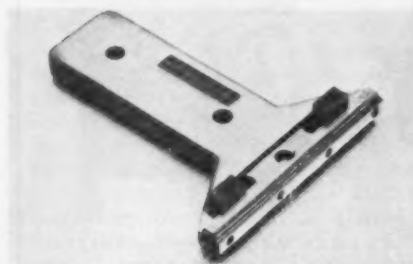
Use postpaid card. Circle No. 800

Machine Attachments



FEED-OUT HEAD does cross facing, grooving, and under-cutting. The main head is attached to the spindle of one of the machine units. The entire unit moves forward to a positive stop, and an auxiliary cylinder in the back of the unit then creates the actuating motion. The design is one of many mechanisms for expanding and retracting cutter heads to and from cutting position. **Gairing Tool Co., Detroit, Mich.** Space No. 318.

Use postpaid card. Circle No. 801



MILLING MACHINE T SQUARE simplifies and facilitates positioning of the

workpiece. Setup is fast, accurate and in proper 90° relation to the spindle and table movements. The workpiece, either large or small, is placed against the wear-strip and clamped into position; indicating is unnecessary. The tool serves to support the workpiece and prevent shifting while under pressure from the cutter. **Advance Products Corp., Benton Harbor, Mich.** Space No. 2111.

Use postpaid card. Circle No. 802

Magnifiers



FLOATING-ARM MAGNIFIER Model M-209 combines two seeing aids in the movable head: (1) optically correct magnification and (2) cool fluorescent lighting. The 5" double-convex lens of high quality crown optical glass has a focal length of 13", a power of three diopters. Uses three T5 6-watt tubes. Universal base permits the fixture to be clamped or screwed to any surface—horizontal, vertical or sloping. Choice of two other base models: desk and floor. Applications in industry: tool-making, diemaking, machining, as-

ASTE EXPOSITION . . .

sembly, inspection, testing, plant laboratory work, etc. Dazor Mfg. Corp., St. Louis, Mo. Space No. 1675.

Use postpaid card. Circle No. 803

Marking Machines

AIRGRIT BLAST-ETCH MARKING MACHINE, can mark a wide variety of long or short cylindrical parts of various diameters. It utilizes four Airgrit nozzles



to produce a mark on a wide arc of the circumference of the parts. The blast etch principle of marking allows distortion-free marking on delicate surfaces without damage to part being marked. Jas. H. Matthews & Co., Pittsburgh, Pa. Space No. 1324.

Use postpaid card. Circle No. 804



Put Muscles In
Your Lubricants

MOTOR MICA

REG. U. S. PAT. OFF.

ANTI-FRICTION
COMPOUND

A clean white powder. Improves cutting oils. Dies last longer. Solves tough lubrication problems. Ask for free samples.

SCIENTIFIC LUBRICANTS CO.
3469 N. Clark St. Chicago 13, Ill.

Use postpaid card. Circle No. 495

martin

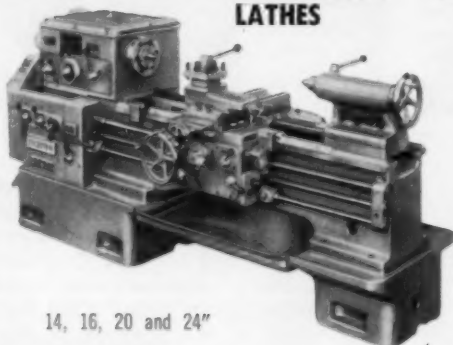
HEAVY DUTY
PRODUCTION
LATHES

AND
THE

LEINEN

RANGE
OF
LATHES

Providing Maximum Precision
Efficiency And Versatility

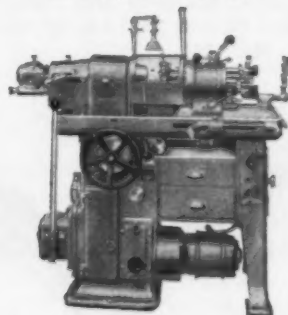


14, 16, 20 and 24"

We also represent:

WEBO drilling machine (Eastern States Rep.)
COLLET and ENGELHARD horizontal boring mills.
EICHLER milling machines.

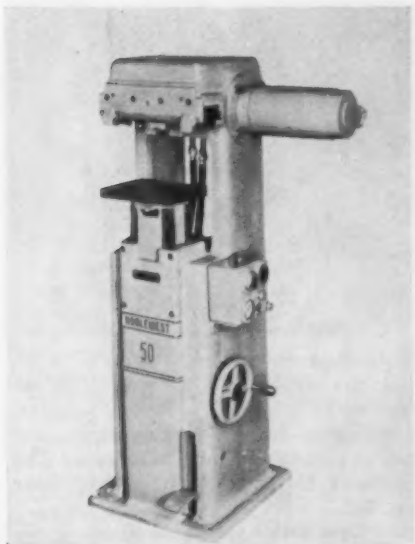
See us at Booth No. 817, A.S.T.E. Show, Philadelphia



Write today for full
information.

TRANSMARES CORPORATION
15 WILLIAM STREET HANOVER 2-6156 NEW YORK 5, N.Y.

Use postpaid card. Circle No. 496



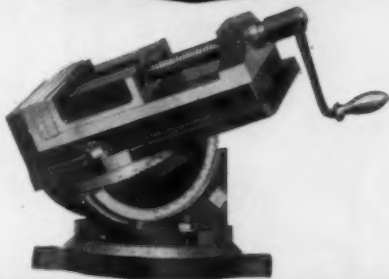
NOBLEWEST MODEL 50P1 ROLL MARKING MACHINE, all-pneumatic, general purpose, marks round or flat work pieces with equal facility and will, according to the announcement, handle approximately 75% of all industrial marking applications. **The Noble & Westbrook Mfg. Co., E. Hartford, Conn. Space No. 837.**

Use postpaid card. Circle No. 805

Measuring Equipment

TOOLING BRIDGE for the accurate measurement of models, dies, and tools during the tooling process has upright and horizontal pieces fabricated of light weight magnesium. Also featured at this manufacturer's booth will be a new lightweight magnesium tooling angle with expandable sections so that the height can be increased as desired. A heavy duty toolmakers and machinists work bench with a $1\frac{1}{2}$ " cast iron top will be shown for the first time. A new welding table with cast slots, suitable for precision welding operations and

**HERE IS THE ULTIMATE IN
A TIME-SAVING
SWIVEL VISE**



HERE IS WHY:

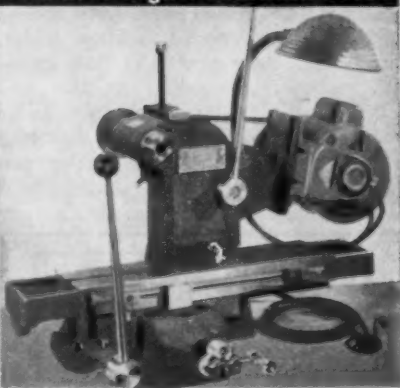
Can be set at any angle ... and work placed in position AND removed without disturbing the setting. Easily moved from one machine to another. Write today for fact filled illustrated folder with partial list of users.

DONOVAN MFG. CO.

80 Batterymarch St., Boston 10, Mass.

Use postpaid card. Circle No. 497

**Precision small part milling
... at a High Production Level**



Easily converted to small surface grinding or small turning
write for literature

**NORTHERN ILLINOIS MACHINISTS
CRYSTAL LAKE RD. MCHENRY, ILL.**

Use postpaid card. Circle No. 498

ASTE EXPOSITION . . .



the positioning of other units during hand tooling or assembly operations will be displayed. Also shown for the first time will be a welding table stand and new dovetailed straight edges and slotted angle plates. **The Challenge Machinery Co., Grand Haven, Mich. Space No. 1073.**

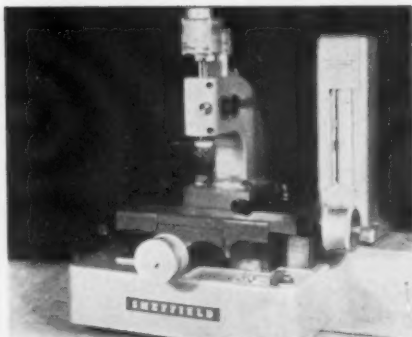
Use postpaid card. Circle No. 806

PRECISIONAIRE HOLE COORDINATE MEASURING MACHINE checks hole centerdistance or location faster, easier, and more precisely than existing methods, according to the announcement. The true location of holes is indicated irrespective of diameter tolerances. Two models presently are available—one model checks hole



DRILL THESE HOLES
BY A QUICK, EASY INEXPENSIVE METHOD
 Your business letterhead will bring literature
WATTS BROS. TOOL WORKS
 Wilmerding, Pa.

Use postpaid card. Circle No. 499



centerdistances in areas up to 6" x 6", and the other will accommodate an area up to 10" x 10". The 4" dia. barrel micrometers have 1" gaging range, and are graduated in ten millionths. **The Sheffield Corp., Dayton, Ohio. Space No. 222.**

Use postpaid card. Circle No. 807



COORDINATE CATHETOMETER permits measurement of two dimensions on objects in a vertical plane and measurements on inaccessible, recessed or remote areas; claimed to result in reduction of 50% in inspection time. **Gaertner Scientific Corp., Chicago, Ill. Space No. 426.**

Use postpaid card. Circle No. 808

MACHINE and TOOL BLUE BOOK

the **ARC-TWIN** *Cuts Two Perfect Notches* in One Downstroke of Press!

SAVING both time and cost, it gives you perfect T-joints — instantly ready for welding or brazing without deformation or finishing! Twin-acting punch shears clean, from inside out, leaving two matching notches (in perfect 180° alignment) with every downstroke of the punch press. Quickly interchangeable dies and punches accommodate pipe and tubing from ½" to 2½" O.D.; special units, up to 3" O.D.

Special Arc-Twins for double notching stainless steel or monel metal and units built to your specifications can also be furnished.



Ask for
twin-notched
sample of
pipe
or tubing

VOGEL

TOOL AND DIE CORPORATION

1825 North 32nd Avenue
Melrose Park, Illinois

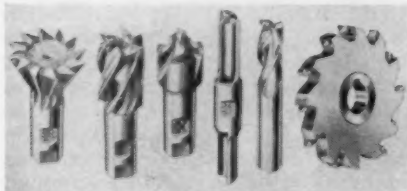
Use postpaid card. Circle No. 500

Micrometers

DIAL MICROMETER, 1" capacity, is designed for rugged, heavy-duty use. Surprisingly light in weight, it is well balanced for easy handling. It can be modified for special purposes through the use of specially shaped contacts and anvils. **B. C. Ames Co., Waltham, Mass. Space No. 227.**

Use postpaid card. Circle No. 809

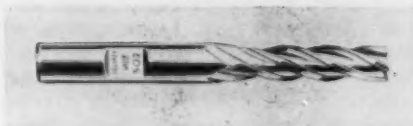
Milling Machine Cutters



MILLING CUTTERS, 134 of them, will be introduced at this manufacturer's booth. New high speed steel tools that

will be added to the line are (left to right): four 60° angular cutters; 79 square end (single and double) end mills; 14 shank type corner rounding end mills; 15 two-flute straight end mills. Ten Nelco solid carbide three-flute end mills and twelve Nelco carbide tipped stagger tooth side milling cutters will also be previewed at the Show. All of the above cutters are standards and will be available from stock. **Cutting Tool Div., Brown & Sharpe Mfg. Co., Providence, R.I. Space No. 122.**

Use postpaid card. Circle No. 810



ECLIPSE PRECISION END MILLS will be demonstrated on a milling machine operating at all speeds and feeds

FOR FAST ACCURATE HEIGHT MEASUREMENT it's HEIGHT MASTER

Multi-purpose Height Masters are portable, completely self-contained instruments. Specifically designed for use in precision layout work, inspection, checking jigs and fixtures, or wherever fast and highly accurate height measurement is a prime necessity.

FEATURES:

- No gage blocks or other reference equipment necessary.
- Precision-built in sizes from 17" to 72". Adjustable vertically from 2".
- Certified accurate to .000050".
- Lends itself easily to scribing.
- Individually calibrated.
- Dial indicator easy to read.
- Simple to operate.
- Competitively priced.

ALSO! 17" and 24" models with guaranteed accuracies of .0001" and .000050"—certified by an independent approved Gauge Test Lab.



Write for literature and price list
(Dealer/Distributor inquiries invited)

PACIFIC GAGE, INC.

A Division of Darco Industries, Inc. 2151 E. Rosecrans Ave. El Segundo, Calif.
Use postpaid card. Circle No. 501

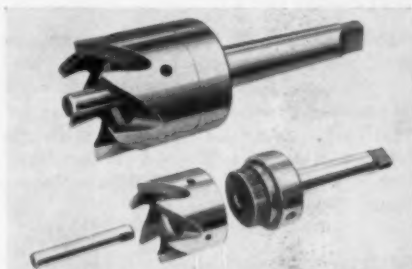
ASTE EXPOSITION . . .

on various types of materials including aluminum, steel, brass, and plastic. Also exhibited will be the complete line of Eclipse quality end-cutting tools, including high speed steel cutters, carbide tipped cutters, etc. **Eclipse Counterbore Co., Detroit, Mich. Space No. 344.**

Use postpaid card. Circle No. 811

84" 6½ TON MILLING CUTTER. Two of these giant shear clear face mills are to be used on an Ingersoll duplex aluminum scalping machine at the exhibit. They will remove 6,000 cu. in. of metal per minute. In a typical cut taking ½" of stock from 48" wide billets, these cutters are said to produce an exceptional 20 rms micro-inch finish, feeding at 277" per minute. **The Ingersoll Milling Machine Co., Cutter Div., Rockford, Ill. Space No. 621.**

Use postpaid card. Circle No. 612

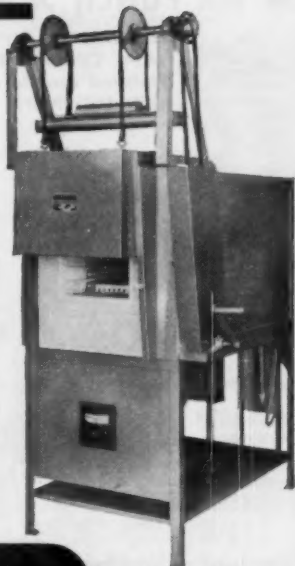


THE HOLE-MILL is a high-production tool operating like a conventional hole saw. It produces deep holes in flat, thick plate, or on curved cylindrical pieces; mills through-holes in stock as thick as ¾" in some tool sizes. The tool uses automatic feeds on various machines, goes completely through stock in one pass without clearing chips and can be used on alloy steels as well as low carbon. It can be resharpened as required. Due to the shape of teeth

**DESIGNED
FOR MAXIMUM EFFICIENCY
BUILT IN 28 SIZES
HUPPERT
FLOOR MODEL FURNACES**

- Continuous operation to 1850° F.—intermittent to 1950° F.—for 2300° F. on special order.
- Complete with indicating electronic controller.
- Tight-sealing, wedge-type door.
- Standard for 220 V. AC, single or 3 phase operation—110 V. or 440 V. on special order.
- Multi-insulation for maximum efficiency.

Request literature on complete line of
Huppert Furnaces.



K. H. HUPPERT CO.
Manufacturers of Electric Furnaces and Ovens

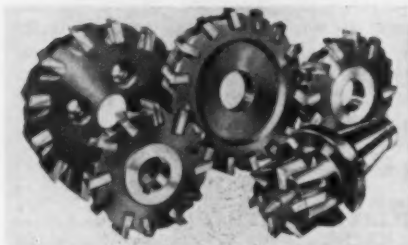
6845 Cottage Grove Ave., Chicago 37, Illinois

Model No. 16 Illustrated
Inside Dimensions
12" W. x 8" H. x 18" D.
\$1050.00 complete

Use postpaid card. Circle No. 502

and special chamfer on their sides, chips are forced up and outwardly. An especially deep tooth-form leaves ample opening on sides to eject chips even when teeth are buried deeply in the workpiece. **Robert H. Clark Co., Beverly Hills, Calif. Space No. 1901.**

Use postpaid card. Circle No. 813



WEDGE-TYPE CUTTERS, available in high speed steel; have blades held in place by adjustable wedges, and locked

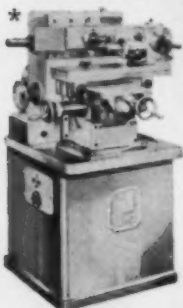
in place by a firm and dependable locking device. They are available in staggered tooth, half side mills, integral shank end mills, shell end mills, and face mills. **The O. K. Tool Co., Inc., Milford, N.H. Space No. 1047.**

Use postpaid card. Circle No. 814



SHEAR-JOY CUTTER features a high positive axial rake and a negative radial

FORM and PUNCH SHAPER



ECONOMICAL PUNCHES
with **CURVED NECKS**
finished completely **IN**
ONE CHUCKING

with the
JEMCO
K-150
punch shaper

sample
punches



1 hr.



1.5 hrs.



2 hrs.



1.5 hrs.



1.5 hrs.



4 hrs.



3.5 hrs.

- Guaranteed accuracy $\pm .00025''$
- 30 power built-in microscope for high precision—close tolerances

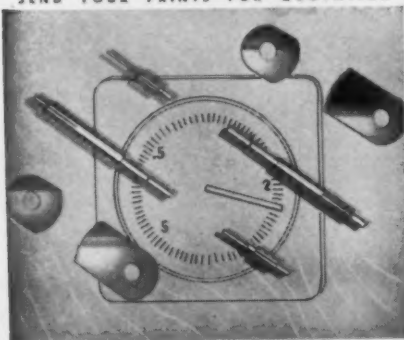


EXCLUSIVE TERRITORIES OPEN
write for complete information to . . .
Jersey manufacturing co.
401-A LIVINGSTON ST. • ELIZABETH, N. J.

See us at the Tool Show—Booth 2154
Use postpaid card. Circle No. 503

20 TO 200 D.P.

SEND YOUR PRINTS FOR QUOTATION



SPURS • HELICALS • WORM AND WORM GEARS
STRAIGHT BEVELS • LEAD SCREWS • RATCHETS
CLUSTER GEARS • RACKS • INTERNALS • ODD SHAPES

THE Finest IN GEARS

Beaver Gear Works Inc.

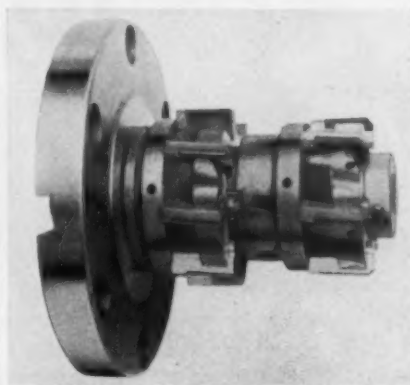
1033 PARMELE ST. ROCKFORD, ILLINOIS

Use postpaid card. Circle No. 504

ASTE EXPOSITION . . .

rake. It is furnished with a supreme high speed steel blade, and will be demonstrated showing superior feeds and speeds. Lovejoy Tool Co., Inc., Springfield, Vt. Space No. 1870.

Use postpaid card. Circle No. 185



MULT-O TOOLS are designed for high-production, transfer-type operations and combine multiple operations in single machining cuts on modern transfer-type machines. Special features of these cutting tools are interchangeability of blades in tools to minimize the number of blade sizes necessary, improved blade mountings, and new blade holding means suited to each particular application and tool size. Most cutting edges are carbide tipped inserted blades. Exhibit will feature Mult-O Tools used for operations on power steering housings, together with the parts which are processed on a Greenlee 35-station transfer machine. Barber-Colman Co., Rockford, Ill. Space No. 1255.

Use postpaid card. Circle No. 816

MILLING CUTTERS, designed and developed specially for milling with throw-away carbide inserts, are said to assure users easy indexing and highly accurate positioning of the inserts in



the body and eliminate entirely the time and cost of re-grinding blades. Of heat treated alloy steel, they are made in two parts so all the bearing surfaces can be precision ground. McCrosky Tool Corp., Meadville, Pa. Space No. 949.

Use postpaid card. Circle No. 817

Milling Machines

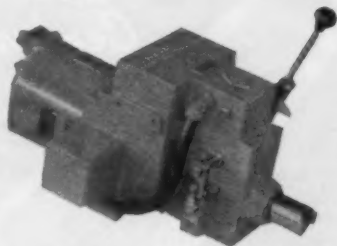
U. S. HALF MILL, available in both right and left hand models, will be displayed as a duplex, base mounted, integrated, production machine. It has a common 10" x 36" table mounted between right and left hand Half Mill assemblies. Both half mills are slide mounted, permitting independent "in/out" adjustment. The displayed machine



Send for free 32-page catalog

the clamp folks / **ADJUSTABLE CLAMP CO.**
403 N. Ashland, Chicago 22, Ill.
Use postpaid card. Circle No. 505

NEW Heavy Duty Fen Automatic Wrench



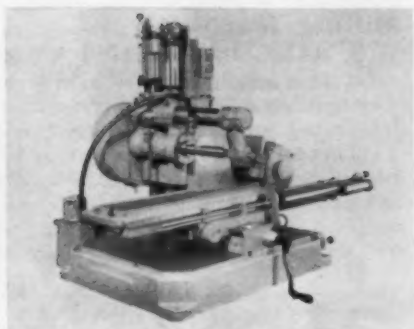
Illustrated above is the Model 4MH showing the heavy duty construction.

For detailed information regarding the application of the Fen Automatic Wrench to your machines, phone, wire or write.

The Model 4MH Fen Automatic Wrench was designed for hi-duty cycle. Therefore, it can be used on hi-production automatic equipment. The Model 4MH incorporates an impact reactor which reduces the load on the fixture and increases the life of the holding device.

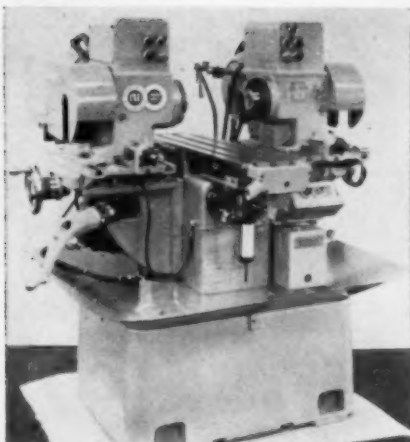
THE **FEN**
MACHINE COMPANY
28914 LAKELAND BLVD.
WICKLIFFE, OHIO

Use postpaid card. Circle No. 506



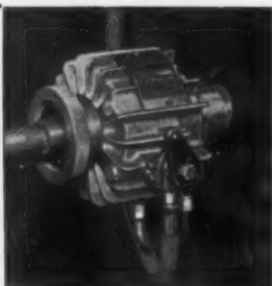
will have an 18" stroke air hydraulic table feed, and will be demonstrated on production work. Its building block construction permits it to be furnished with spindle heads mounted opposed, side by side, or in staggered heights. **U.S.-Burke Machine Tool Div., Cincinnati, Ohio. Space No. 1261.**

Use postpaid card. Circle No. 618



TWIN MILL is a duplex miller with opposed geared milling heads, each having independent forward-reverse motor drive providing a selection of 15 spindle speeds. For precision milling operations

WILSON AIR COLLET CLOSER



STEP UP PRODUCTION 20% +
... for most lathes to 1"
bar stock capacity

- Hold delicate parts without damage or adjustment
 - Iron grip for heavy work
 - No adjusting for stock or part variations
 - Finger-tip or foot control eliminates operator fatigue
 - Eliminates jarring of head stock
- (Ten day **FREE TRIAL** to reliable firms)

WILSON AIR COLLET CLOSER, INC.
909 40th Ave. NE, Minneapolis 21, Minn.

Use postpaid card. Circle No. 507

NIELSEN Heavy Duty *Live Centers*

Write for
catalog on
live centers

Adapted
for heavy
duty work.
Precision type
ball and roller
bearings assure
maximum capac-
ity for high speed
production and long
service.

NIELSEN, INC. LAWTON,
MICH.

Use postpaid card. Circle No. 508

MACHINE and TOOL BLUE BOOK

on materials ranging from tool steel to plastics. It has the ability to mill two or more surfaces simultaneously. Feed rate is variable from 0 to 60 ipm. The Robert E. Morris Co., West Hartford, Conn. Space No. 501.

Use postpaid card. Circle No. 819

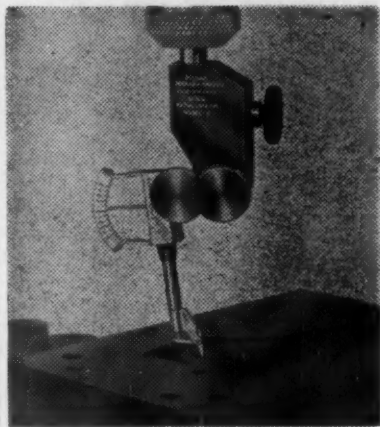


MILLING MACHINE SIZE O is a small high speed, high production automatic cycle machine. Both air and hydraulic cylinders are built into cross-slide. Clamping and unclamping of parts are automatic. A 1 hp motor drives spindle through V-belt pulleys and back gear. All gears and belt drives are enclosed. Speeds from 150 to 4000 rpm are available. Adcock & Shipley, Ltd., New York City. Space No. 1470.

Use postpaid card. Circle No. 620

NO. 1 PLAIN MILLING MACHINE has longitudinal power or hand feed, 26" or 32", dependent on table size. The spindle is of heat treated special alloy steel, with No. 40 milling machine standard

POSITIVE Control . . .



Simply turn the MICRO ADJUSTING SCREW

OSLUND MICRO ADJUSTING INDICATOR HOLDER

saves a great amount of set up time. It is equipped with two thumb screws. One of these is a lock screw. You loosen this screw, move clamp until Indicator is in approximate position, then tighten. For final adjustment, simply turn the second screw, the Micro Adjusting Screw, until the Indicator pointer reaches desired position.

The Oslund Holder can be used in three positions:

1. with the Holder set in normal position, it will indicate from dead center to approximately 2" diameter.
2. by a simple turn of the Holder Swivel Clamp you can indicate up to 5" diameter.
3. by application of the extension bar you can indicate up to 15" diameter.

This Holder was originally designed to be used with the Oslund Universal Indicator as this Indicator has a 360° reading face which eliminates walking around the machine or using a mirror. Whereas the Oslund Holder is most outstanding on our own Indicator, it can be used on the Federal Test Master and Standard Gage Check Master as well.

Adapter for Last Word Indicator available from stock. We can also make this Oslund Holder to fit all types of other Indicators.

DEALERS: TERRITORIES AVAILABLE

OSLUND Precision Products

15 Sigourney St. Hartford 5, Conn.

Use postpaid card. Circle No. 509

COILS & CIRCLES FORMED ON A CURVIT BENDER



CURVIT CORPORATION
R.D. 2, North Attleboro
Massachusetts
Myrtle 5-6211

Use postpaid card. Circle No. 510

Greenerd

ARBOR PRESSES

For Assembling: Key-
way Cutting, Broach-
ing, Piercing, Oil
Grooving, Straighten-
ing, Forming, Press-
ing, and many other
jobs.

65 Standard styles
and sizes.

From 1/2 to 20
tons pressure for
manually oper-
ated presses.

From 1 1/2 to 75
tons pressure
for motor
driven hy-
draulic
presses.

Originators
of the Arbor
Press.

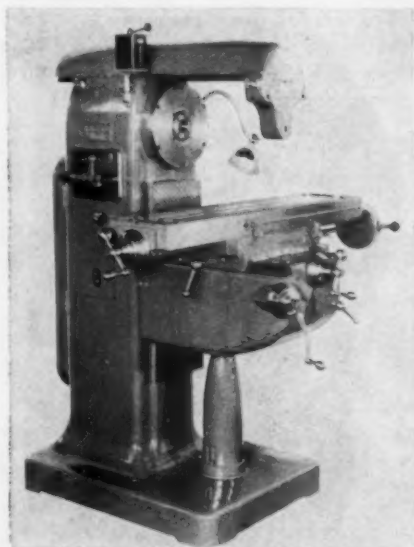
Send for
Cat. 40-H



GREENERD ARBOR PRESS CO.
141 CROWN ST. - NASHUA, N.H.

Use postpaid card. Circle No. 511

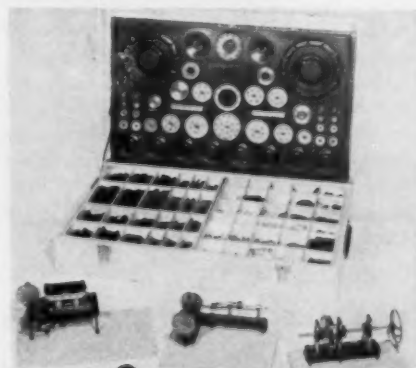
ASTE EXPOSITION . . .



taper hole. Hole through spindle 41/64".
Eight speed changes are from 50 to 1000
rpm. **Index Machine Co.**, Jackson, Mich.
Space No. 524.

Use postpaid card. Circle No. 821

Model Building Kits



TWO NEW MACHINE CONSTRUCTION KITS are designed to enable en-
gineers, designers, scientists, and in-

MACHINE and TOOL RIIIIE RROK

ventors to make precision working models of practically any type machine, drive or mechanism. Constituted of round rods and beams that can be assembled into frameworks, precision mechanical elements as ball bearings, gear racks, ratchets, sprockets, etc., are used. Pictured are models of FAC kit mechanical elements and a FAC-X2 machine construction kit. **FAC Div., Detroit, Mich. Space No. 1700.**

Use postpaid card. Circle No. 822

Motors, electric

ELECTRIC MOTORS in both fractional and integral hp ratings, designed for use on machine tools and associated equipment, will be exhibited. Applications include coolant pumps, drill units, indexing heads, and hydraulic pump motors. **Doerr Electric Corp., Cedarburg, Wis. Space No. 1335.**

Use postpaid card. Circle No. 823

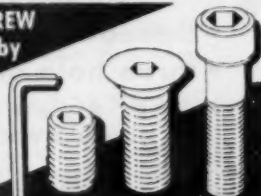
Optical Flats

VK MICRO-KOTED OPTICAL FLATS. The coating is a very uniform and transparent layer of hard metal of the correct thickness for improved fringe quality. The principal feature is the very black, narrow, sharp-edged quality of the dark band, permitting greater precision as well as readability. **The Van Keuren Co., Boston, Mass. Space No. 419.**

Use postpaid card. Circle No. 824

SOCKET SCREW PRODUCTS by ALLOY

Furnished both in High Grade Alloy Steel and 18-8 Stainless Steel



Representatives in major industrial areas. Your inquiries invited.

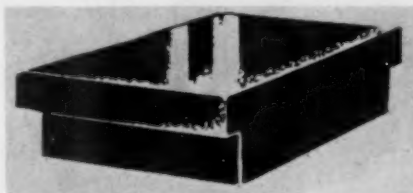
ALLOY SOCKET SCREW PRODUCTS CO.

2942 N. Lakewood Ave. Chicago 13, Ill.

Use postpaid card. Circle No. 312

April, 1958

Plates, granite surface



GRANITE SURFACE PLATES, inspected by the most modern mechanical and optical checking equipment, are made of black diabase granite which is mined in Pennsylvania. The granite is claimed to be denser, stronger, less flexible under load, and more uniform in texture and hardness. A complete line of angles, straight edges, and stands are available. **Boice Gages, Inc., Hyde Park, N.Y. Space No. 234.**

Use postpaid card. Circle No. 825



DRILLS

from 2 to 7 holes

TAPS

from 2 to 7 different sizes in one chucking

ARBO-2

automatic indexing turret type multi-spindle drill head

JEMCO'S ARBO-2 fits any single spindle vertical drill press

all operations completed with one chucking — no reversing of drill spindle necessary for tapping — speeds changed quickly — reduces machining time — tapping capacity 1/8 to 9/16 — drilling capacity 0 to 19/32

EXCLUSIVE TERRITORIES OPEN

write for complete information to . . .



Jersey manufacturing co.

401-A LIVINGSTON ST. • ELIZABETH, N. J.

See us at the Tool Show—Booth 2154

Use postpaid card. Circle No. 513

ASTE EXPOSITION . . .



BLACK GRANITE SURFACE PLATES.

Seizure of gage blocks and checking fixtures is claimed to have been eliminated by a special method of lapping Microflat surface plates to provide a continuous bearing surface interspersed with micronic valleys. These minute reliefs afford sufficient air pocket relief between bearing surfaces to prevent seizure of instruments. The sub-divisions of the grain pattern are so small as to be invisible to the naked eye. Plates are lapped to a finish of 3-16 rms. Collins Microflat Co., Hawthorne, Calif. Space No. 400.

Use postpaid card. Circle No. 826

Power Quills



HIGH TORQUE SUPER-SPEED POWER QUILLS, Models 55 (pictured), 65, and 70, are designed for application in missile and rocket programs, as well as other types of manufacturing where precision machining is important. The tools, with speeds ranging from 35,000 rpm to 45,000 rpm and motor hp ratings

SPIRIT LEVELS



from
OHAUS
SCALE
CORPORATION

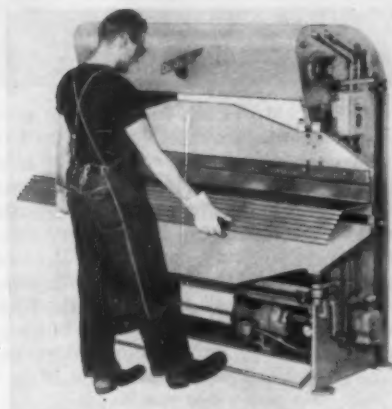
- precision ground glass bodies
- nickel plated brass cases
- threaded lug
- three hole style
- other styles and sizes available

COMMERCE AVE., UNION, N. J.

of 1/3, 1/2, and 3/4 hp, are self-contained with motor and drive designed as single integrated unit. **Precise Products Corp., Racine, Wis. Space No. 1155.**

Use postpaid card. Circle No. 827

Press Brakes



6-FOOT DI-ACRO HYDRA-POWER PRESS BRAKE, Model 20-72, has a maximum capacity of 20 gauge mild steel over a six-foot bed. Ram can be "inched" on the press brake and can be "backed off" at any point in the work cycle by operating reverse lever and using the foot control. The machine features an adjustable relief valve which can be preset to apply the required tonnage to bend low ductile material. A complete line of standard press brake dies is available in lengths from 6" to 6' in 6" increments. **O'Neil-Irwin Mfg. Co., Lake City, Minn. Space No. 821.**

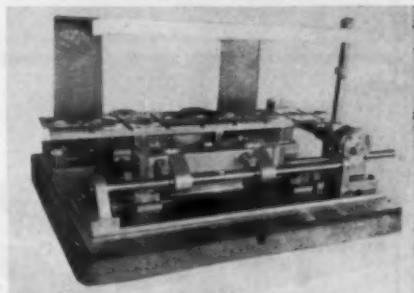
Use postpaid card. Circle No. 828

HYDRAULIC PRESS BRAKES, Scharinghausen, are available in all sizes, open ended or closed design. Hydraulic drive is by an axial multiple piston pump with automatic adjustment of the quantity of fluid fed from the pipes. Low pressure—large quantity of fluid fed, high speed; high pressure—small

quantity of fluid fed, low speed. Speed of the pressing operations adapts itself automatically to the requirements of the stock to be formed. **Barer Engineering & Machinery Co. Ltd., Champlain, N.Y. Space No. 1370.**

Use postpaid card. Circle No. 829

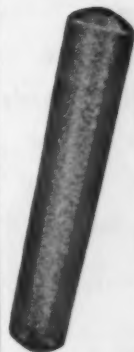
Press Room Equipment



LIVERNOIS TRANSFER UNIT is used primarily in press automation, and is adjustable right on the job. It has the

SPECIFY

STANDARD



← TAPER PINS

ALSO FOR

- MACHINE RACKS
- WOODRUFF KEYS
- MACHINE KEYS

STANDARD TAPER PINS are milled from carefully selected bar stock to extremely close tolerances . . . straight to taper. The uniformity and accuracy of **STANDARD TAPER PINS** will save time on assembly . . . will assure you of trouble-free service. Available in **STANDARD** steel . . . also in stainless steel and brass. Specify **STANDARD TAPER PINS** and other **STANDARD** products.

SEND TODAY FOR CATALOG

STANDARD STEEL SPECIALTY CO.

BEAVER FALLS • PENNSYLVANIA

Plants: Beaver Falls, Pa.; Hammond, Ind.

ASTE EXPOSITION . . .

advantage of grouping two or more dies together on a single die set and in one press. The unit prevents mis-hits or double hits caused by operator fatigue. It is available in Model A, the popular size, and Model B for larger presses. Livernois Engineering Co., Dearborn, Mich. Space No. 923.

Use postpaid card. Circle No. 830

DANNEMAN *Precision* DIE-SETS

**Precision-Bored
on Master Plates**



DANNEMAN DIE-SET DIVISION
ACME-DANNEMAN COMPANY, Inc.
201 Lafayette St. New York 12, N. Y.

**CATALOG
ON REQUEST**

Use postpaid card. Circle No. 516

"DAVIS" KEYSEATERS

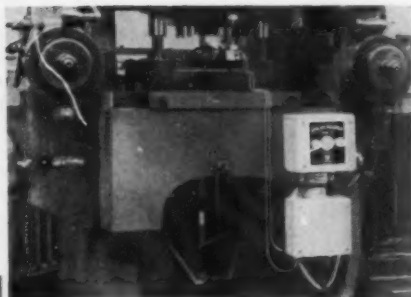


are
moderately
priced
Efficient
Economical
Durable

Built in 3 sizes for cutting keyways
1/16" to 1" width. Circular
upon request.

DAVIS KEYSEATER CO.
407 1/2 Exchange St. Rochester 8, N. Y.

Use postpaid card. Circle No. 517



CIRCUIT MASTER MARK III, new electro-mechanical overload detector for power presses, incorporates a new design principle in the electronic compensator which automatically adjusts for temperature or any other slow change of working conditions. It electronically trips the power clutch control which shuts down the machine when misfeed, buckling, end of material, jamming, etc., occurs. Wintriss, Inc., New York, N.Y. Space No. 1921.

Use postpaid card. Circle No. 831

THE HELIOS 50 EK VERNIER CALIPER

With Automatic Thumb Lock . . . With all Inch Scales or one Inch and one Metric Scale:

\$9.90

The 55 A with set screw lock with one Inch and one Metric scale or all Inch scales:

\$8.90

All prices F.O.B. New York

Also available . . .

Dull Chrome finish calipers and Dial Indicator calipers

For details on other imported precision instruments, write

**6" SCALE
HARDENED**
Guaranteed
Accuracy
within .001"
Double Length
Vernier



**NEISE
MODERNTOLLS**

KARL A. NEISE, Dept. M7
404 Fourth Avenue
New York 16, N. Y.

Use postpaid card. Circle No. 518



P. A. S. STRAIGHTLINE PRESS UN-LOADER is a standard air-powered package unit that unloads sheet metal panels or forgings from presses in a straight line. It will be mounted on a portable A-frame type mounting, and will be equipped with the new Vac-Hand attachment which has an induced-suction rubber cup design that avoids marking of panels or moldings. Press Automation Systems, Inc., Centerline, Mich. Space No. 1256.

Use postpaid card. Circle No. 832

LINLEY JIG BORERS

Give You Maximum Utility—At Low Cost



The improved Linley Jig Borers are more efficient than ever. Accurate and fast in operation—easy to set up. Made for the exacting requirements of small part precision work. Using Linley Jig Borers allows larger capacity borers to be used where intended, on heavier jobs. Once you've installed a Linley, you'll wonder how you got along without it in your shop.

Table Size: 7" x 17½"
Table Travel: 6½" x 10"

Send for complete details.

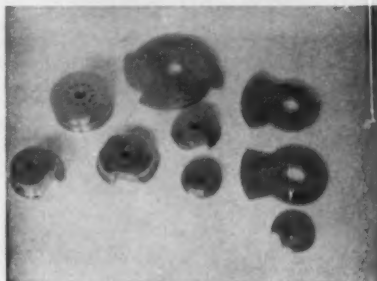
LINLEY BROTHERS CO.

JIG BORERS - RIVET SPINNERS
663 State St. Ext., Bridgeport 1, Conn.

Use postpaid card. Circle No. 519

April, 1958

CIRCULAR FORM TOOLS B & S CAMS



FAST SERVICE

Designed and Made.
Made to Your Design.

NIBARGER TOOL SERVICE

1765 North Emporia
WICHITA 4, KANSAS

Use postpaid card. Circle No. 520

Hand
Operated

Cutters



Made in three
sizes: A, B, and C

for cutting
**ANGLES
CHANNELS
FLAT BARS
RODS
WIRE ROPE**

(change cutter type by
changing blades)

The compound lever construction of these cutters makes them much easier to operate than cutters of equal-rated capacity with direct pull action.

Catalog sheets on request covering our complete line of metalworking tools.

T. H. LEWTHWAITE MACHINE CO.

312 East 47th St.

New York 17, N. Y.

Use postpaid card. Circle No. 521

373

Presses



ONE AND TWO-TON HYDRAULIC MULTIPRESSES combine the features of high production with versatility in tooling to handle an endless variety of small part forming, assembling, etc. The machine has been designed to fit into automated lines working in conjunction with various types of feed mechanisms. The ram pressure on the one-ton unit can be quickly set from 500 to 2000 lb. The two-ton unit can be quickly set from 500 to 4000 lbs. ram pressure. A dual safety control system insures safety. **Denison Eng'g. Div., American Brake Shoe Co., Columbus, Ohio. Space No. 1012.**

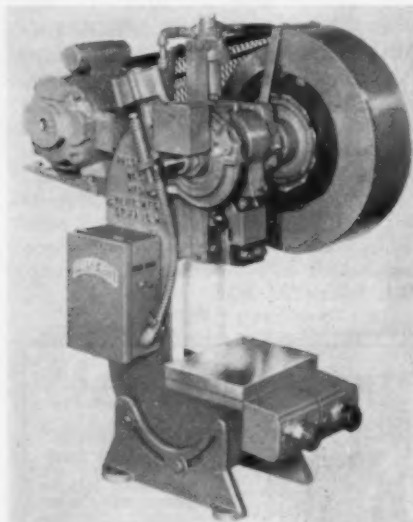
Use postpaid card. Circle No. 833

60-TON T LINE PRESS of the welded steel frame type has a four-inch stroke operating at 150 spm. Features include low inertia pneumatic clutch with electrical controls, a slide made with detachable head for ease of changing from standard to flanged slide face, and an inclinable mechanism which can be operated either by air power or manually. **Emhart Mfg. Co., V & O Press Div., Hudson, N.Y. Space No. 721.**

Use postpaid card. Circle No. 834

110-TON BOX SLIDE PRESS of welded steel frame construction is built to JIC specifications and features self-cooling combination clutch and brake with sintered metal friction surfaces, power slide adjustment mechanism, air or manually operated inclining mechanism, and enclosed balance wheel, back shaft and motor drive. **Emhart Mfg. Co., V & O Press Div., Hudson, N.Y. Space No. 721.**

Use postpaid card. Circle No. 835



PRESS-RITE NO. 0 5-TON PRESS, equipped with Airflex air clutch, provides a top speed of 450 s.p.m. This doubles the speed of the standard No. 0 Press-Rite press, which is rated at 225 s.p.m. **Sales Service Machine Tool Co., St. Paul, Minn. Space No. 2035.**

Use postpaid card. Circle No. 836

Projectors, optical

WILDER MICRO-PROJECTOR, in a new floor model, is a fully self-contained, self-supporting unit of modern compact design particularly useful alongside of machine tools, or where space is at a premium. It has convenient height, inclined screen, and shelf



available which can hold spare screens or charts. The instrument has six standard magnification lenses, three different types of measuring stages, and a full line of accessories. **Opto-Metric Tools, Inc., N.Y., N.Y. Space No. 101.**

Use postpaid card. Circle No. 837

SCHERR MICRO PROJECTOR features a vertical principle of design offering these advantages: A horizontal stage onto which work of a flat nature is laid; a comfortably inclined screen on which the enlarged image is reproduced, and a choice of fixed standard



magnifications that are changed simply by slipping different projection lenses into a vertical socket.

The 4" diameter stage opening and a 14" diameter round screen result into extra large capacity. Custom made precision coated lenses and achromatic condenser lenses are employed for different objectives 10 to 100X magnification. **Geo. Scherr Co., Inc., N.Y., N.Y. Space No. 445.**

Use postpaid card. Circle No. 838

Pumps

SEAL-LESS TYPE COOLANT PUMPS feature simplicity of construction to reduce maintenance of machine downtime. Extra heavy shaft extension pre-



When you think of small
END MILLS — think of
MICRO MINIATURES

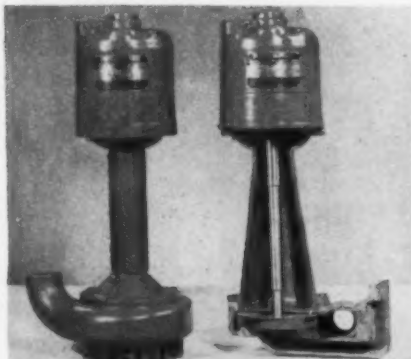
ANNOUNCEMENT BY POPULAR DEMAND

MICRO MINATURE END MILLS are now available in 2 flute 3/64", 5/64", 7/64", 9/64" and 11/64" sizes from local stocks. Those former "SPECIAL" sizes are now "STOCK SIZES" offering the advantages of stock prices and deliveries.

DISTRIBUTORS IN PRINCIPAL CITIES

WOODSON TOOL CO. 4811 Lennox Blvd. Inglewood, Calif.

Write for
Catalog



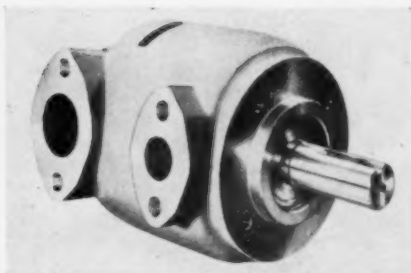
vents possibility of shaft whip. The close tolerances to which the pump column and body are machined make it possible to maintain the proper impeller clearance, so abrasives or chips can be handled without injury to the pump. **Pioneer Pump Div., Detroit Harvester Co., Paris, Ky. Space No. 1657.**

Use postpaid card. Circle No. 839

**THREAD GRINDING
CENTERLESS GRINDING
and
PRECISION MACHINING**

**WARD THREAD
GRINDING COMPANY**
265 Howard Ave., Bridgeport, Connecticut

Use postpaid card. Circle No. 523



VANE PUMPS for continuous 2000 psi service, the "T" series, feature a hydraulically-balanced vane, the key to its continuous high efficiency. The pump is available with either clockwise or counterclockwise shaft rotation. It consists of a housing which provides an outlet connection, a bore for support on the shaft bearing and shaft assembly, and a larger bore which contains the floating pumping cartridge. **Denison Eng'g. Div., American Brake Shoe Co., Columbus, Ohio. Space No. 1012.**

Use postpaid card. Circle No. 840

Punches

BAL-LOK PUNCH AND DIE BUTTON RETAINERS are among the items to be featured, also pressfit headtype and Bal-Lok interchangeable punches in various shapes. A press will be operating at the exhibit to show actual perforation of .040 hole in .090 thick steel. This operation will be performed with dura-



**DYKEM
STEEL BLUE**

Stops Losses

**making Dies and
Templates**

Popular package 8-oz. can fitted with Bakelite cap holding soft-hair brush for applying right at bench; metal surface ready for layout in a few minutes. The dark blue background makes the scribed lines show up in sharp relief, prevents metal glare. Increases efficiency and accuracy.

Write for sample on company letterhead
THE DYKEM COMPANY
2301G North 11th St. • St. Louis 6, Mo.

Use postpaid card. Circle No. 524

ble sleeve supported punches and will perform this supposedly impossible piercing operation as a routine job, according to the manufacturer. **Porter Precision Products, Cincinnati, Ohio. Space No. 1821.**

Use postpaid card. Circle No. 841



JEKTOLE PIERCING PUNCH is said to permit increased production, lower tooling costs, and faster punch sharpening when needed. It is pictured with companion insert die. **Dayton Perforators, Inc., Dayton 4, Ohio. Space No. 2106.**

Use postpaid card. Circle No. 842

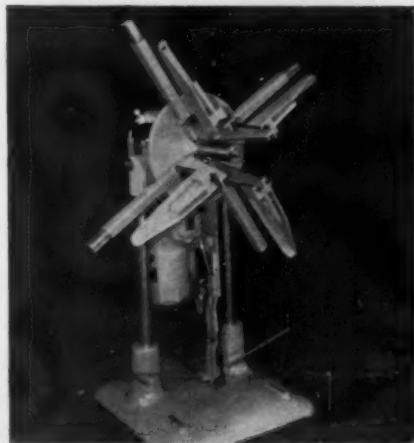
Reels, stock



NO. 600 SINGLE PLAIN STOCK REEL, the first unit in a production line for

automatic feeding to power presses, has coil height which is adjustable. Coils are automatically centered and held in a balanced position for easy, smooth unwinding. It claims to speed production for both hand and automatic feeding of stock. The reel can be tilted at any angle. The single plain stock reel will take coils up to 600 lbs. weight, up to 10" in width. Maximum coil O.D.—46"; maximum coil I.D.—20"; minimum coil I.D.—9½". **Cooper Weymouth, Inc., Stratford, Conn. Space No. 1357.**

Use postpaid card. Circle No. 843



ACR-1040 U.S. MOTOR-DRIVEN CENTRALIZING REEL incorporates a new method of centralizing the forks to suit the I.D. of coils to be supported. Specifications are: suitable for material up to 10" in width and coils with I.D. from 10 to 20", O.D. up to 40" at 16" core dia. **U.S. Tool Co., Inc., Ampere (East Orange), N.J. Space No. 1554.**

Use postpaid card. Circle No. 844

Refrigeration Equipment

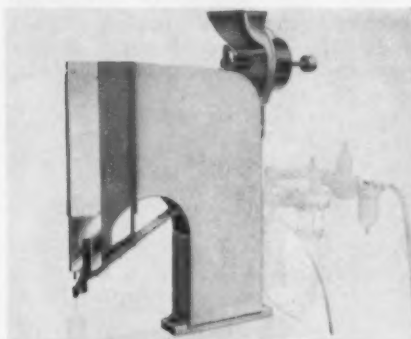
REFRIGERATION EQUIPMENT for both production chilling and testing, Model SA-180-3 has an operating temperature of —70 to —180°F. Chamber

Riveting Machines



size is 26" long x 14" wide x 13" deep. Outside dimensions are 38" long x 31" wide x 43" high. The machine has a dual cascade refrigeration system, and is a portable plug-in type, with a totally enclosed capillary system. This is a typical example of custom-built equipment designed for handling small parts. Similar units can be supplied to handle large parts and heavier production schedules. Cincinnati Sub-Zero Products, Cincinnati, Ohio. Space No. 976.

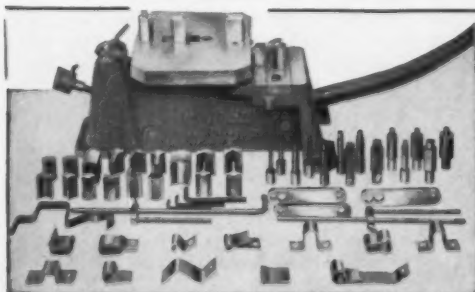
Use postpaid card. Circle No. 845



MODEL 56 SINGLE-SPINDLE PNEUMATIC RIVETER, with a maximum semi-tubular rivet capacity of 5/32" dia. by 3/4" long, is designed for rivet applications requiring multi-head installations. Its 3 1/4" width and tapered nose construction make it possible to arrange almost any number of Model 56 heads on a common compact base and meet center distance requirements of as low as 3/4". It is available in either bench or pedestal form. Pictured is a single head. The Milford Rivet & Machine Co., Milford, Conn. Space No. 1671.

Use postpaid card. Circle No. 846

MODEL 109-J RIVETING MACHINE, double drive, adjustable-center, automatically feeds and sets two large-diameter rivets, of different styles and



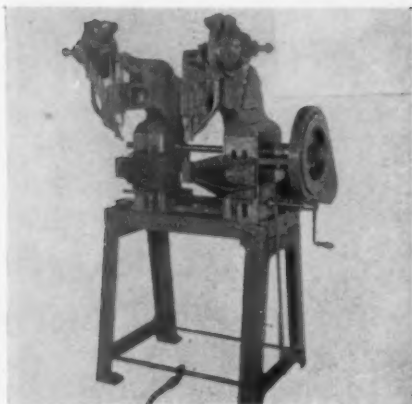
Multiform BENDER CUTTER

CUTS, BENDS, PUNCHES

Available in hand, air and hydraulic models, the MULTIFORM is shipped complete with full assortment of dies and mandrels to punch, bend, and cut round or flat brass, bronze, aluminum, steel, etc., up to 1/2"x1 1/2" as illustrated, other models up to 1/2"x8".

J. A. RICHARDS CO.
KALAMAZOO, MICH.

Use postpaid card. Circle No. 525



lengths, at one time. It has a 12" throat and capacity for setting two rivets up to .200" dia. The machine can be furnished as a bench model when equipped with a solenoid trip, or can be equipped for air operation of the setting levers. It can be used for riveting electrical chassis and equipment, and automotive

parts and accessories. **Tubular Rivet & Stud Co., Quincy, Mass. Space No. 1717.**
Use postpaid card. Circle No. 847

Sanders, belt

BELT SANDERS, for 2" and 1" wide belts, feature twin interchangeable air motors, both governed for proper cutting speed. Included are all the adjustments necessary for proper and best application of belts, i.e., motor alignment adjustment, belt tracking adjustment, and belt tension adjustment. **The Rotor Tool Co., Cleveland, Ohio. Space No. 1832.**

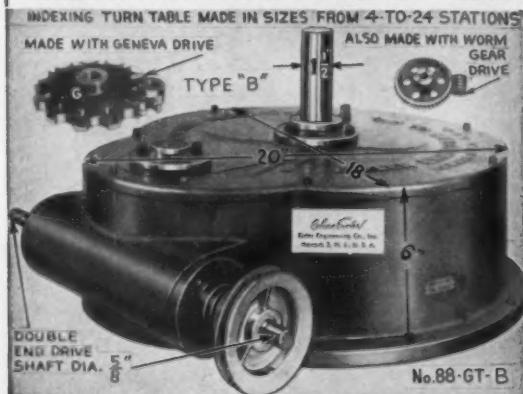
Use postpaid card. Circle No. 848

Saw Blades, cut off

DEEP SLITTING AND CUT-OFF SAWS have a curled chip disposal action which is said to enable heavier feeding, while efficient tooth design assures longer life. Material is square cut, with filled finish and no burr. **Circular Tool Co., Inc. Providence, R.I. Space No. 326.**

Use postpaid card. Circle No. 849

INDEXING MACHINERY — CAMS — GENEVA GEARS — TURNTABLES



MFG. REP. WANTED

ASK FOR CATALOG No. 88-57

DR. CHARLES EISLER ME. FOUNDER

CHARLES EISLER, JR. PRES.

EISLER ENGINEERING CO., INC.

762 SOUTH 13th STREET

NEWARK 3, NEW JERSEY

Use postpaid card. Circle No. 526

ASTE EXPOSITION . . .

Sawing Machines



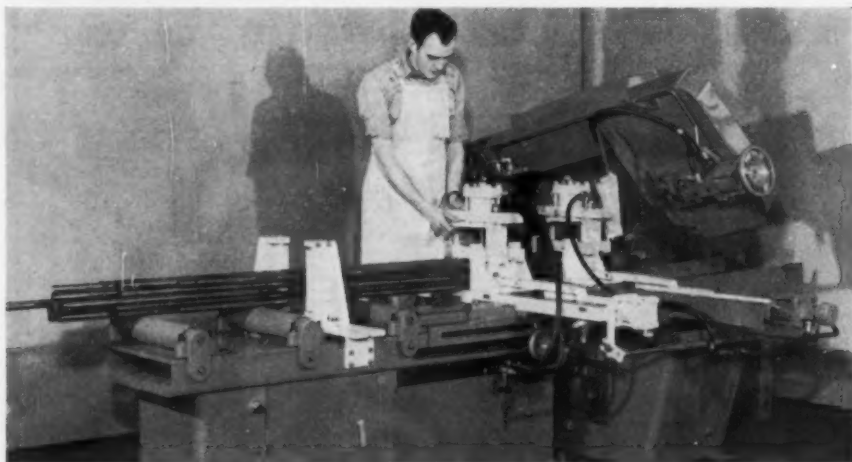
IMPERIAL RADIAL-ARM MACHINE, designed for nonferrous metal, is heavy, rugged, and accurate. Built-in power features, such as the elevation mechanism, reduce operator fatigue. DeWalt Div., American Machine & Foundry Co., Lancaster, Pa. Space No. 1572.

Use postpaid card. Circle No. 850



MODEL 16-3 CONTOUR-MATIC BAND MACHINE, because of its hydraulically operated power work table, is said to make production fixturing simple. The machine is designed for slotting, splitting, notching, and many other operations. The DoAll Co., Des Plaines, Ill. Space No. 604.

Use postpaid card. Circle No. 851

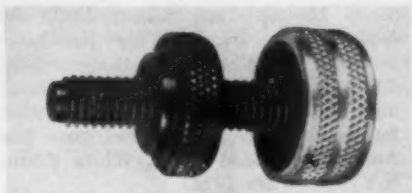


MODEL C-58 POWER SAW permits many small bars to be cut at one time. Nesting vises are said to increase production cut-off rates of the power saw. The use of Demon high speed steel

saw band and power saw provide an efficient team to cut off stock in large or small quantities. The DoAll Co., Des Plaines, Ill. Space No. 604.

Use postpaid card. Circle No. 852

Screws



TORQUE SCREWS are specifically designed to secure in place all parts against the forceful drive of cutting tools, which is accomplished by controlling the end pressure of the torque screw. When the pre-set and pressure has been reached, the precision-designed head of the torque screw rotates freely, thus avoiding overtightening and spoilage due to movement of part. The screws come in four types. **Techni-Tool, Inc., Los Angeles, Calif. Space No. 1955.**

Use postpaid card. Circle No. 833

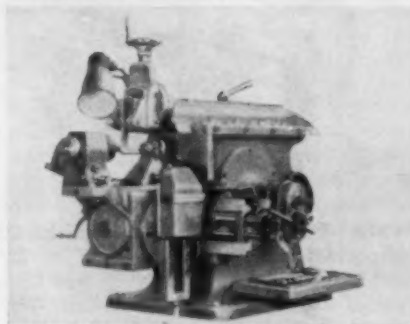
UNBRAKO SELF-LOCKING SOCKET SCREW. Made self-locking by the Nylok (nylon) insert seated in a hole drilled part way into their threaded section, Unbrako screw products, like this cap screw, are said to hold tight, stay tight under severe shock and vibration. Resilient nylon pellet compresses under female threads of the tapped hole as bolt is installed and exerts outward



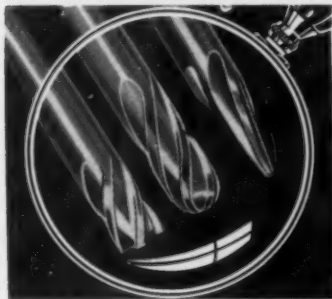
pressure which forces mating threads firmly together under extreme friction. **Standard Pressed Steel Co., Jenkintown, Pa. Space No. 322.**

Use postpaid card. Circle No. 854

Shapers



JEMCO H-20 UNIVERSAL TOOL ROOM SHAPER is reported to facilitate a wide variety of high precision work regardless of whether surfaces or pro-



10 to 20 Times Longer Cutting Life Means Lower Tool Costs

"DIXIE" provides End Mills of solid carbide with cutting edges processed with exclusive "Micro-Finish" to assure the user of long-lasting, super sharp tools.

FOR PRECISION FINISHING



DIE SINKING, HOLE SIZING, AND CUSTOM TOOLING



SEND FOR OUR NEW CATALOG

DIXIE TOOL INDUSTRIES
4555 W. FRANKLIN AVE.
BRIDGEPORT, MICHIGAN

Use postpaid card. Circle No. 527

ASTE EXPOSITION . . .

files are to be machined. A pole changing flange motor allows shaping to be done either with a draw or conventional cut. The working range of the machine is 8" x 11 $\frac{7}{8}$ ". Accuracies of $\pm .00025$ area are claimed. **Jersey Manufacturing Co., Elizabeth, N.J. Space No. 2154.**

Use postpaid card. Circle No. 855

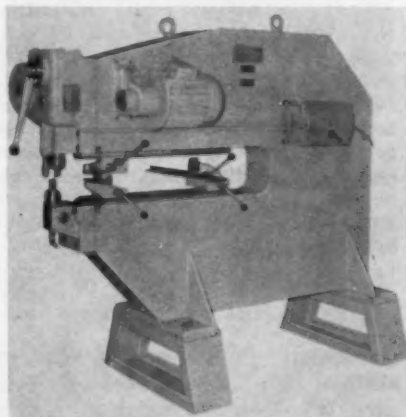


VMA UNIVERSAL SHAPER ES-22 imported from Sweden, has a 22" stroke. Main motor drive, 5 hp. Universal table can be swivelled 360° around a rigid trunnion. Built-in table top can be tilted 15° in either direction from horizontal by worm and worm-wheel with hand crank. Features: eight ram speeds; ten feeds, actuated by one-

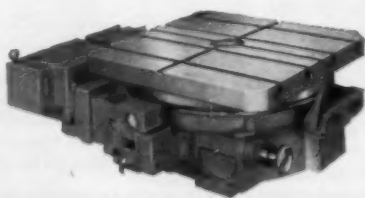
piece 11-step cam roller; horizontal rapid power traverse for the table, actuated by a separate motor; automatic lubrication of ram ways, bearings, crank gear, rocker arm and sliding block, linkage and feed gear box. **Austin Industrial Corp., White Plains, N.Y. Space No. 1471.**

Use postpaid card. Circle No. 856

Shearing Machines



PULLMAX MODEL P-9 universal shearing and forming machine has new cutting capacity, up to $\frac{3}{8}$ " in mild steel and $\frac{1}{4}$ " in stainless steel. Quick-locking attachments and fast changing of tools permit the machine to do straight, circle or irregular shearing, slotting,



FASTER set-ups and positioning

You save set-up and positioning time with Gilbert rotary tables. *Hand-indexing:* 36" and 50" square or round. *Power rotary and power feed:* 36", 50", 60", and 72" square or round. Special tables built to your requirements. For complete descriptions and specifications, write for *Bulletin 854.*

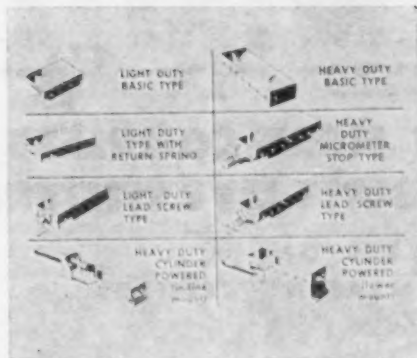
THE CINCINNATI **GILBERT** MACHINE TOOL COMPANY • CINCINNATI 23, OHIO

Use postpaid card. Circle No. 528

nibbling, louver cutting, beading, jogging, edge bending, flanging, dishing or planishing. Eight different stroke lengths, from .080" to .320", and variable speeds from 500 to 2000 strokes per minute. **American Pullmax Co., Inc., Chicago, Ill. Space No. 1722.**

Use postpaid card. Circle No. 857

Slides, dovetail



PRECISION SLIDE ASSEMBLIES, 132 standard models available, have stroke lengths from 3/4" to 8", with slide working surfaces from 2" x 3" to 8" x 24". A variety of stock components can be obtained for building up equipment, and can be furnished with return spring, lead screw, micrometer stop, and air or hydraulic cylinder. **Russell T. Gilman, Inc., Grafton, Wis. Space No. 1016.**

Use postpaid card. Circle No. 858

Solvents, metal cleaning

WINSOR MACHINE CLEANER No. 607 is a new, practically odorless version of the regular Winsor machine cleaner. It is a low viscosity fluid concentrate to be used in water solutions for cleaning and purging machine tools. When used at a concentration of approximately 2% in water, it acts as a potent cleaner and germ killer. It will remove gummy deposits on the working surfaces of

machines and caked deposits of dirt, grit, scale, chips, fatty materials and other sludge-forming elements from the hard to clean inside surfaces of coolant lines and fittings. **Anderson Oil & Chemical Co. Inc., Portland, Conn. Space No. 311.**

Use postpaid card. Circle No. 859

Steel (plastic)



SELF-LUBRICATING MATERIAL, Devcon WR, which is said to outwear steel sixty to one, has been used for such applications as guides on textile machinery, low speed bearings, and building up surfaces subject to severe wear. Because of resistance to most acids, alkalies, solvents and other chemicals, it has proved of value for lining tanks. Devcon WR is supplied in one, four, and fifteen pound containers. Pictured is pulp refining machine repaired with Devcon WR. **Devcon Corp., Danvers, Mass. Space No. 2004.**

Use postpaid card. Circle No. 860

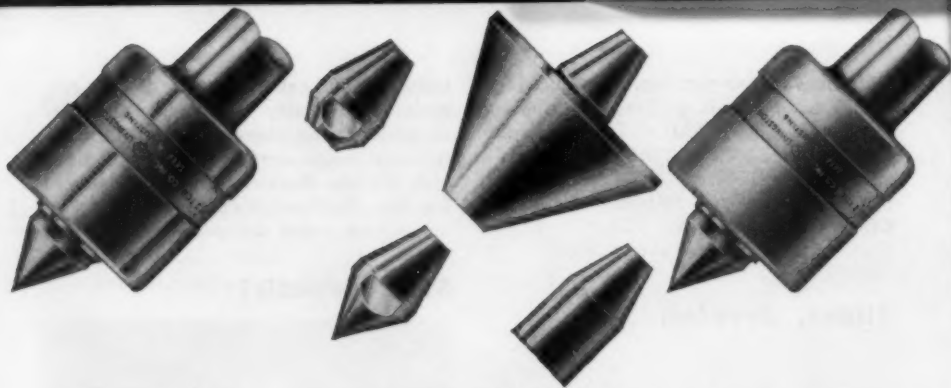
POLYTOOL LINE OF PLASTIC TOOLING MATERIALS to be exhibited will include not only epoxy, but also polyester, phenolic, and polyurethane resin systems. **Reichhold Chemicals, Inc., White Plains, N.Y. Space No. 2034.**

Use postpaid card. Circle No. 861

Steel Stock

VISCOUNT 20 STEEL, free machining prehardened; Viscount 44 hot work die steel; aircraft and specialty alloys will be displayed by the **Latrobe Steel Co., Latrobe, Pa. Space No. 245.**

Use postpaid card. Circle No. 862



**Famous Perfection
Grinding Live Center**

**Accurate Detachable Points
H.S.S. and Carbide**

**Expansion Compensating
Lathe Centers**

ANNOUNCING THE FIRST COMPLETE LINE OF PRECISION-BUILT LIVE CENTERS

**INCLUDING 5 TYPES OF
EXPANSION COMPENSATING CENTERS**

- the only complete line
- the only guaranteed self-adjusting
live center

INTRODUCING J & S Tool Company's complete new line of live centers with accuracy better than .0001", with these features:

- Guaranteed one year.
- Self-adjusting bearing take-up.
- RPM speeds up to capacity of present-day machines.
- Correct capacity rating.
- Hardened and ground throughout.

Write today for a free copy of the J & S Live Center Catalog.

J & S TOOL CO., INC.

882 Dorsa Avenue

LIVINGSTON, NEW JERSEY

J & S TOOL CO., INC., ALSO MANUFACTURES FLUIDMOTION WHEEL DRESSERS
CLAMPS • NO-BEND MILLING ARBORS AND CLAMPCUT MILLING VISES

See our booth No. 1501 at the ASTE Show

Use postpaid card. Circle No. 529

April, 1958

For free information . . . use these postage-free Action Cards

New Products at ASTE Show . . . Circle key number

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616
617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632
633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648
649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664
665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696
697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712
713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728
729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744
745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776
777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792
793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808
809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824
825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856
857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872
873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888
889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904
905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920

Company

Name..... Position.....

Street.....

City..... Zone..... State.....

Product Mfd.

April, 1958

For free information . . . use these postage-free Action Cards

Advertisements

circle key numbers

201	226	251	276	301	326	351	376	401	426	451	476	501	526	551	576
202	227	252	277	302	327	352	377	402	427	452	477	502	527	552	577
203	228	253	278	303	328	353	378	403	428	453	478	503	528	553	578
204	229	254	279	304	329	354	379	404	429	454	479	504	529	554	579
205	230	255	280	305	330	355	380	405	430	455	480	505	530	555	580
206	231	256	281	306	331	356	381	406	431	456	481	506	531	556	581
207	232	257	282	307	332	357	382	407	432	457	482	507	532	557	582
208	233	258	283	308	333	358	383	408	433	458	483	508	533	558	583
209	234	259	284	309	334	359	384	409	434	459	484	509	534	559	584
210	235	260	285	310	335	360	385	410	435	460	485	510	535	560	585
211	236	261	286	311	336	361	386	411	436	461	486	511	536	561	586
212	237	262	287	312	337	362	387	412	437	462	487	512	537	562	587
213	238	263	288	313	338	363	388	413	438	463	488	513	538	563	588
214	239	264	289	314	339	364	389	414	439	464	489	514	539	564	589
215	240	265	290	315	340	365	390	415	440	465	490	515	540	565	590
216	241	266	291	316	341	366	391	416	441	466	491	516	541	566	591
217	242	267	292	317	342	367	392	417	442	467	492	517	542	567	592
218	243	268	293	318	343	368	393	418	443	468	493	518	543	568	593
219	244	269	294	319	344	369	394	419	444	469	494	519	544	569	594
220	245	270	295	320	345	370	395	420	445	470	495	520	545	570	595
221	246	271	296	321	346	371	396	421	446	471	496	521	546	571	596
222	247	272	297	322	347	372	397	422	447	472	497	522	547	572	597
223	248	273	298	323	348	373	398	423	448	473	498	523	548	573	598
224	249	274	299	324	349	374	399	424	449	474	499	524	549	574	599
225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600

Inserts: Inside Front Cover Inside Back Cover Back Cover
 1A 1B 1C 1D 2A 2B 2C 2D 3A 3B 3C 3D

Company

Name..... Position.....

Street

City..... Zone..... State.....

Product Mfd.

FIRST CLASS
PERMIT NO. 272
WHEATON, ILLINOIS

BUSINESS REPLY CARD

No Postage Stamp Necessary If Mailed in the U.S.A.

3c POSTAGE WILL BE PAID BY

MACHINE and TOOL BLUE BOOK

READERS' SERVICE DIVISION

WHEATON, ILLINOIS



FIRST CLASS
PERMIT NO. 272
WHEATON, ILLINOIS

BUSINESS REPLY CARD

No Postage Stamp Necessary If Mailed in the U.S.A.

4c POSTAGE WILL BE PAID BY

MACHINE and TOOL BLUE BOOK

READERS' SERVICE DIVISION

WHEATON, ILLINOIS



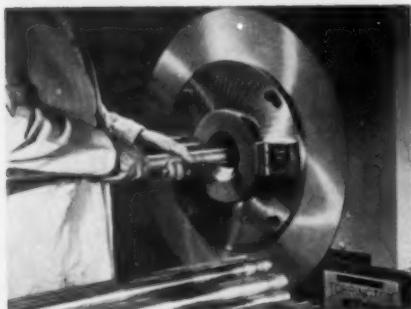
ASTE EXPOSITION . . .

QUALITY CONTROL EQUIPMENT

and methods, including a spark testing demonstration, will be featured at the exhibit. Emphasized will be the economies of the manufacturer's cut-to-size service on sheet steel and sheet aluminum. The display will point up the firm's modern and complete facilities for supplying flat rolled steel and aluminum in first operation blanks, multiple cutting sizes, and coils. How the combination of large and diversified stocks of carbon and stainless sheet steel and sheet aluminum, and extensive shearing and slitting equipment, operate to keep fabricators' metal costs down, and how the company's quality control program operates to safeguard customers' interests, will be explained by specialists. **Joseph T. Ryerson & Son, Inc., Chicago, Ill. Space No. 1036.**

Use postpaid card. Circle No. 864

Swaging Machines

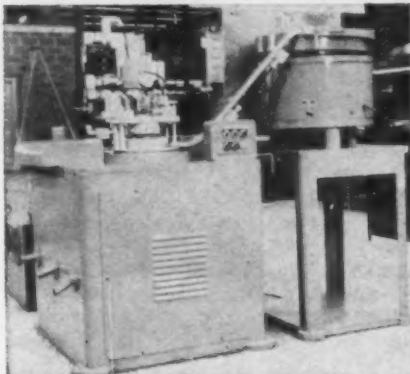


STANDARD MODEL ROTARY SWAGING MACHINE, with a plexiglass face plate to show the swaging action in slow motion, will be exhibited. Pictured is one of several models to be shown. Also at the exhibit will be the new electrohydraulic die closing rotary swaging machine. The purpose of this machine is to make reductions in the diameter of rods, heavy tubing, or other parts,

which cannot be reduced by feeding into the machine in the usual manner. With the die closing attachment, the dies which rotate around the work are brought in radially by means of hydraulically operated wedges. **The Torrington Co., Torrington, Conn. Space No. 1216.**

Use postpaid card. Circle No. 865

Tables, index



AUTOMATIC INDEX TABLE, hydraulic drive, can be used for inspection, assembling, deburring, drilling, etc. Fourteen different "go" and "no go" dimensions can be checked with selective rejects for every check. For assembly work, hoppers can be supplied to automatically deliver parts into position. **Inter-Lakes Engineering Co., Mount Clemens, Mich. Space No. 801.**

Use postpaid card. Circle No. 866

CAM MILLING

Fully equipped modern machine shop with extensive **Jig Boring, Surface Grinding, Horizontal Boring and Thread Grinding** facilities as well as modern **Cam Milling and Cam Grinding** equipment.

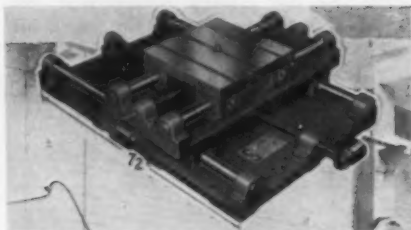
Your Inquiries Answered Promptly

HIMOFF MACHINE CO. INC.
23-22 45th Road Long Island City 1, N. Y.

Use postpaid card. Circle No. 530

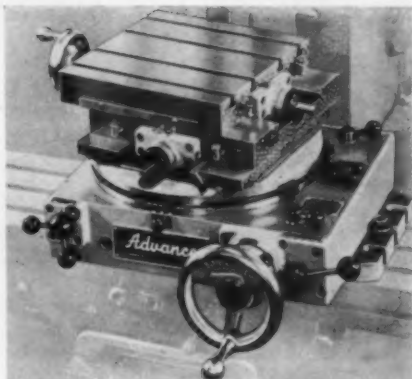
ASTE EXPOSITION . . .

Tables, rotary



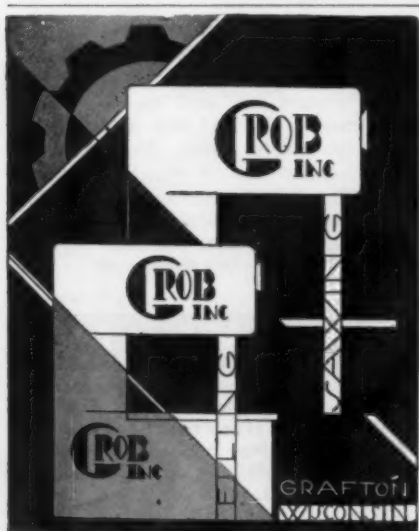
BALL BUSHING COMPOUND TABLE, operating in conjunction with a tape-control unit will highlight the "Build-It-Yourself," "Building Block" theme at the exhibit. The demonstration will be a complete cycle of operation, including reading of prints, the typing of tapes, reading of tape, and final operation of table, and machining as dictated by tape. **The Standard Electrical Tool Co., Cincinnati, Ohio. Space No. 946.**

Use postpaid card. Circle No. 887



CROSS-SLIDE ROTARY TABLE utilizes a principle of fast positioning of the workpiece from one location to another. Once the workpiece is located and clamped in position, it is seldom moved until completed—regardless of the number of cutting operations involved. Savings in setup time are as much as 90%. **Advance Products Corp., Benton Harbor, Mich. Space No. 2111.**

Use postpaid card. Circle No. 888



GROB INC. Grafton, Wis.

Use postpaid card. Circle No. 531

Tap Sharpeners

SHARPENING HEADS, Size K, collet capacity 1-1/16", and Size L, collet capacity 2 1/4", feature quick change cam pin plates giving facilities for sharpening taps with any number of flutes and a variable relieving cam which is calibrated for accurate repeat settings. **Henry P. Boggis & Co., Cleveland, Ohio. Space No. 1058.**

Use postpaid card. Circle No. 889

Tapping Attachments

PUSH-BUTTON LEAD SCREW TAPPING ATTACHMENT derives its power or rotation from standard drill presses. Air pressures required range from 18 to 40 lb., depending on size of tap, material being tapped, etc. It can be used in five different ways through its five built-in electrical circuits: automatic,



push-button cycle, push-button jog, foot or fixture switch cycle, and foot or fixture switch jog. **Procunier Safety Chuck Co., Chicago, Ill. Space No. 1725.**

Use postpaid card. Circle No. 870

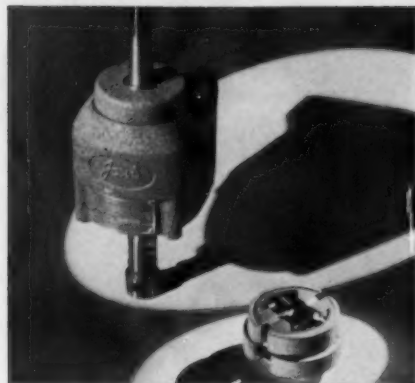
Tapping Compounds



TAP MAGIC is a compound for tapping, threading, drilling, and reaming, effective on castings, alloys, magnesium, steel, etc. It is a scientific blend of chemicals which breaks down surface tension, stress, and metal-to-metal adhesives on tools. It cuts clean threads, and stops tap breakage. **The Steco Corp., Little Rock, Ark. Space No. 2138.**

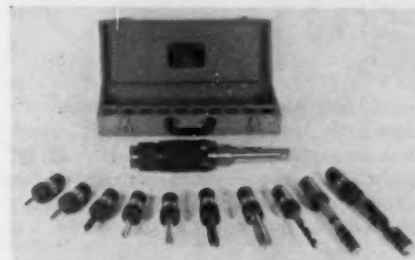
Use postpaid card. Circle No. 871

Tapping Heads



TORQOMATIC TAPPING HEADS, incorporating new straight-line clutch, has also been redesigned for ruggedness, accuracy, and dependability. Straight-line action of the clutch offers a 100% driving surface, increasing its power to twice that of the former clutch. **Jarvis Corp., Middletown, Conn. Space No. 1417.**

Use postpaid card. Circle No. 872

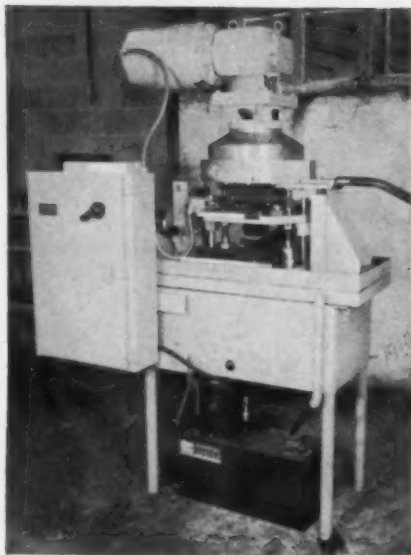


TAP-SAVER TAPPING HEAD. The torque control feature of this head adjusts to exactly the right driving force for each type of material. Secondly, it correctly controls this force to the individual needs of drilling, reaming, counterboring, spot facing, and tapping operations, according to the announcement. **Davis Boring Tool Div., Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. Space No. 1517.**

Use postpaid card. Circle No. 873

ASTE EXPOSITION . . .

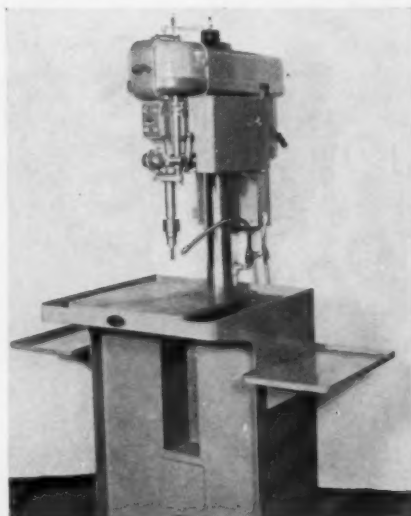
Tapping Machines



100-SPINDLE NUT TAPPING MACHINE features gearless tapping head coupled with a vibratory hopper for almost completely automatic operation. Machine taps 10-32 blanks at the rate of 72,000 pieces an hour. Blanks are manually loaded into the hopper, which has an agitating device that feeds 200 pieces into the cavities of a jig. After the tapping, the pieces are automatically shifted to the end of the table and

dropped into a basket under the bed. For accuracy of threaded hole, drill head has lead screw control to synchronize motion of the table and to control the feed rate. Quick and easy change of taps is also designed into the machine, the head being on a hinge mechanism so that it can be raised to clear the working position. Broken taps and machine down-time are claimed to be practically eliminated by a cleaning and sorting device used before blanks are fed into the hopper. Zagar, Inc., Cleveland, O. Space No. 1738.

Use postpaid card. Circle No. 574



HIGH PRODUCTION TAPPING MACHINE is designed to afford precision thread fits on a range of 8-32 to 1¼-16 threads. The unit features instant tap reversal, with the motor running at constant forward speed by means of a solenoid actuated air cylinder which automatically reverses tap within .002-.003" of bottom. Tap breakage is said to be virtually eliminated and production increased as a result of reduced down time. Thread-All Sales Co., Detroit, Mich. Space No. 1060.

Use postpaid card. Circle No. 875

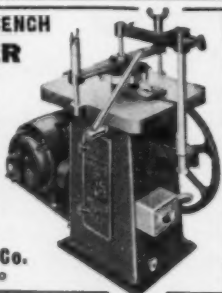
READING BENCH KEYSEATER

Portable — move directly to job; a time saver for both small and large shops.

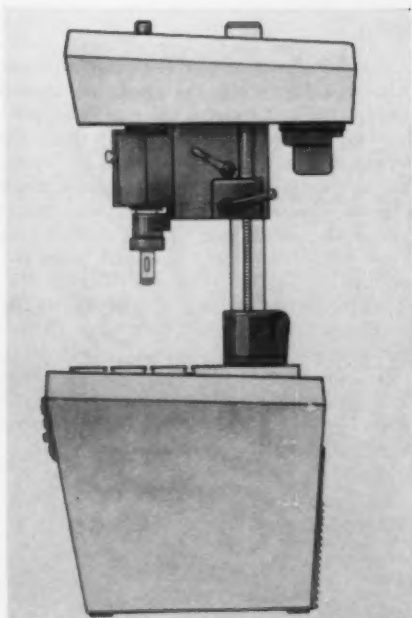
¾" stroke; adaptable for other work.

Low first cost, prompt delivery. Good dealers wanted.

Reading Machine Co.
Cincinnati 27, Ohio



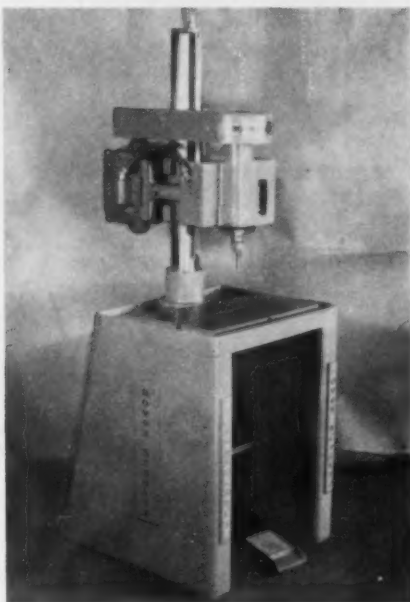
Use postpaid card. Circle No. 532



MULTI-TAP LEAD SCREW TAPPING MACHINE is designed for production tapping, and also for single spindle use. By using many of the components of the Model TU-415 quill type unit, the machine also gains that unit's flexibility. Normally furnished with a flanged quill for multiple tapping head use, interchangeable single spindle noses are also available with No. 1, No. 2 or No. 3 Morse taper adjustable adapters. A

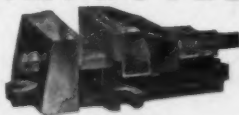
wide range of spindle speeds can be used through the use of speed change gears, from a minimum of 220 rpm to 1200 rpm. **Wisconsin Drill Head Co., Butler, Wis. Space No. 1760.**

Use postpaid card. Circle No. 876



TAPPING MACHINE with positive drive, positive reverse is equipped with three-speed timing belt system, actuated by a special one hp motor with high reversal capacity, 220 or 440, 3 phase,

IMPROVED MACHINE TOOL VISES



DRILL PRESS VISE (Size No's 1 & 2)
Designed for heavy duty drill press and milling machine work. Has legs cast solid on both sides and ends for bolting to machine table.
(Size No. 1—6" jaws, 1 1/2" deep, opens 5". Price \$76.00)
(Size No. 2—10" jaws, 2 1/4" deep, opens 8 1/2". Price \$109.50)



MILLING MACHINE VISE with Graduated Swivel Base (No's 10 & 20)
Has a graduated swivel base, held in place by a center pin and two bolts. Tongue in base can be of any size desired.
Size No. 10—6" jaws, 1 1/2" deep, opens 5". Price \$109.50
Size No. 20—10" jaws, 2 1/4" deep, opens 8 1/2". Price \$149.50.

Dealers' Inquiries Invited—All prices Net F.O.B. Chicago
Write for descriptive literature

**J. E. PLUNKET MACHINE CO. 3230 ARCHER AVE.
CHICAGO 8, ILL.**

ASTE EXPOSITION . . .

60 cycle. Length of stroke is controlled by screw adjustment. Lead screw is made from hardened bearing steel, with ground thread and fitted with a wear compensating screw nut. Head is elevated by a screw-type mechanism. A T-slot table is provided for fixture mounting. Machine is also equipped for use with coolants. **Boyar-Schultz Corp., Broadview, Ill. Space No. 1539.**

Use postpaid card. Circle No. 877

Taps

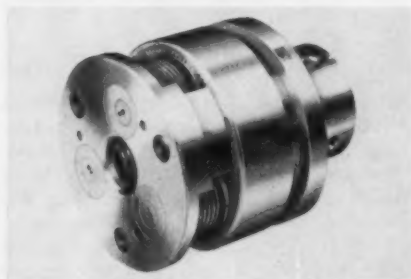


X-PRESS TAP cold forms or swages the thread in ductile metals such as aluminum, zinc, brass, copper, lead, leaded steels. Since the tap internally rolls threads, it eliminates tap breakage due to chips because there are no chips to jam or cause loading. With no flutes of any kind, the tap is strong and not easily broken. This design feature is especially important in the smaller sizes where breakage, rather than wear, is the important element in tap costs. With no cutting edges, pitch diameter can be held close to the "No Go" gage

limit for greater tap life. Because the tap cold forms the material, the thread generated is stronger. Microphotographs of sectioned pieces show that the grain lines are compressed or compacted and the material is made more dense. The threading tool has radial relief to reduce torque and permit free flow of lubrication. Standard tools No. 4 through $\frac{1}{4}$ " in NC, UNC and NF, UNF are provided with taper points for easy starting. They are available in two or four threads of taper for bottoming and through holes respectively. Machine screw sizes, 0 through 3, have radial relief only. **Besly-Welles Corp., South Beloit, Ill. Space No. 632.**

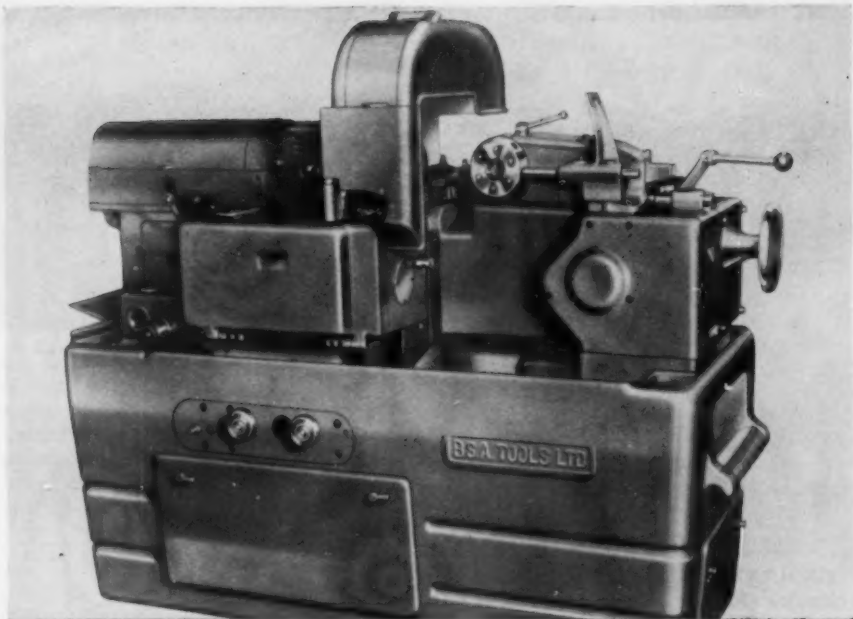
Use postpaid card. Circle No. 878

Thread Rolling Heads



NO. 5 STATIONARY AND REVOLVING THREAD ROLLING HEADS. The stationary head is designed for turret lathes, hand screw machines, and automatic screw machines employing a stationary type head, while the revolving head (pictured) is for application to automatic screw machines utilizing a revolving type head. An advantage of the heads is their ability to produce threads at high speeds. The heads can be operated indefinitely without adjustment after initial size has been established. They make use of replaceable helix angle bushings. **Landis Machine Co., Waynesboro, Pa. Space No. 1538.**

Use postpaid card. Circle No. 879

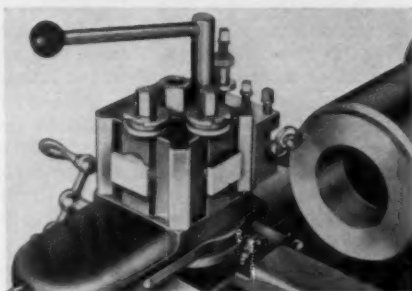


HOW VERS-O-TOOL threading and hollow milling heads and Acme-Fette self-opening thread rolling heads are applied to modern high speed production requirements will be demonstrated at the ASTE Show on a No. 98AL B.S.A. single spindle automatic screw machine built by B.S.A. Tools Ltd., Birmingham, England. The tooling on this machine will utilize two 9/16" DBS Vers-O-Tools to perform two hollow milling operations, one 9/16" DBS Vers-O-Tool for a thread cutting operation, one Acme-Fette head for thread rolling, and one N-2 Acme-Fette for a burnishing operation. In addition, a 9/16" DR Vers-O-Tool will be used on rear end threading attachment in the setup. **The National Acme Co., Cleveland, Ohio, Space No. 2115.**

Use postpaid card. Circle No. 880

Tool Holders

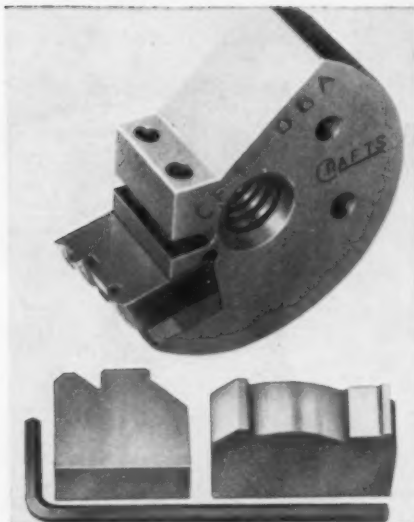
BOENI MASTER MULTI-TOOL-



HOLDER is a quick change toolholder for lathes. With it, cutters can be preset in their respective holders, changed and reclamped as needed for the various operations in seconds. This repeat setting is achieved with an accuracy of .0001". There are five sizes available; a wide range of lathe sizes can be supplied. **Karl A. Neise, New York City, Space No. 1857.**

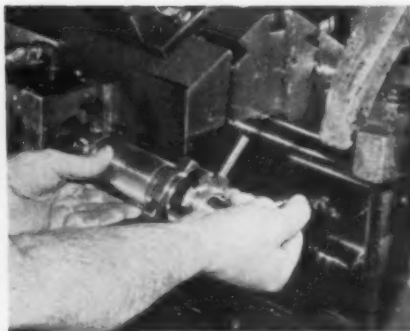
Use postpaid card. Circle No. 881

ASTE EXPOSITION . . .



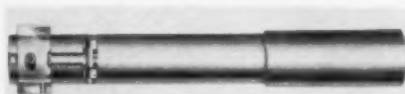
MECHANICALLY CLAMPED carbide circular form tool inserts and CFT Series holders—first introduced at the last ASTE Show, now greatly expanded for use on Brown & Sharps, Davenports, New Britain Gridleys, Acmes, Cones, and other automatics and turret lathes. Fast deliveries because of semi-stock nature of inserts. The manufacturer simply form grinds the carbide inserts to customer's specifications, clamps them in the holder and ships. **Arthur A. Crafts Co., Inc. Boston, Mass. Space No. 115.**

Use postpaid card. Circle No. 882



OPTIMATION HOLDING TOOLS are designed for presetting and quick-changing in order to take advantage of optimum cutting speeds and feeds, and obtain the lowest manufacturing cost per unit—the new machining concept, **optimation. Scully-Jones and Co., Chicago, Ill. Space No. 1635.**

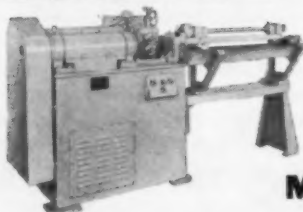
Use postpaid card. Circle No. 883



FINISHING AND ROUGHING BARS are designed to minimize setups and expedite adjustment and blade exchanges without removing bar from machine. A floating mount permits the chip load to balance between the two cutting edges, producing a far smoother

NEW

variable speed, electrically controlled, AUTOMATIC
SHUSTER 2AV Wire Straightening and Cutting Machine.



Capacity: $\frac{1}{16}$ " to $\frac{5}{16}$ " mild steel wire; $\frac{1}{16}$ " to $\frac{3}{16}$ " high tensile wire, 50 to 200 FPM.

Send for details on this high speed, low cost, SHUSTER. Ask for quotes on your wire straightening and cutting needs for any wire sizes from .020" to $\frac{1}{16}$ ".

METTLER Machine Tool, Inc.

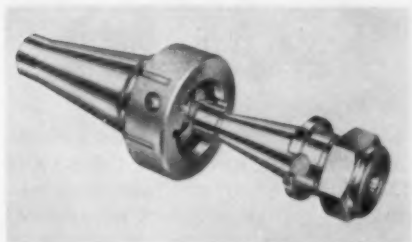
153 E. Adeline St., New Haven, Conn.

See the 2AV at ASTE Show Booth No. 2142.

Use postpaid card. Circle No. 534

surface on precision finishing operations. Blades are adjustable, covering a wide range of bore sizes and allowing for numerous regrinds. Several blade sizes are available for each bar. Inside faces of blades are serrated; mate to allow longitudinal adjustment without skewing. Expansion or contraction of bore is controlled by an internal socket head setscrew. Size is attained by miking across blade edges while adjusting or by grinding to diameter. Cutting blades are furnished in M-3 type high speed steel or carbide tipped. **Robert H. Clark Co., Beverly Hills, Cal. Space No. 1901.**

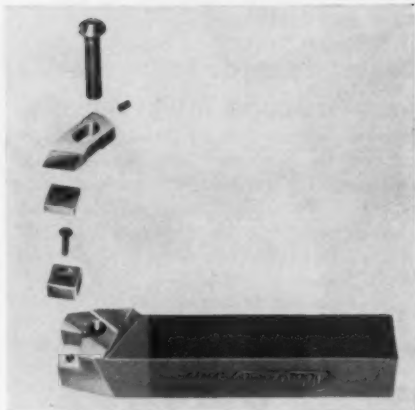
Use postpaid card. Circle No. 284



QUICK CHANGE TOOL HOLDERS, and adaptors, will be exhibited. This new line of holders is designed to take any standard milling machine tapered adaptor. Present tools with MMS tapers may be easily adapted for use in these holders. A feature makes accurate pre-setting of tools easy. Erickson speed indexers for automation projects will also be displayed in operation. **Erickson Tool Co., Solon, Ohio. Space No. 805.**

Use postpaid card. Circle No. 885

DEX-A-TOOL CLAMP has a carbide facing which acts as the chipbreaker or curler. It also has buttress type serrations on the bottom which mesh with serrations on the top of the tool shank. These serrations plus the elongated slot permit adjustment of the chipbreaker width in increments of .030". A socket setscrew located at the rear of the clamp is adjustable against the clamp



locking screw. This feature permits more rapid and positive relocation of the clamp after indexing the tip, prevents careless operator resettings. **Adamas Carbide Corp., Kenilworth, N.J. Space No. 1600.**

Use postpaid card. Circle No. 886

ANOTHER **PANNIER** MASTER MARKER!



PANNIER'S STEEL LETTERS • FIGURES

- Longer lasting, less mushrooming
- Better impressions—clear, clean
- Letters, figures, or symbols
- In sets, assorted, or singly

Pannier Tested Steel Stamps provide you with clear, clean markings, maximum safety, longer life and highest quality.

Write for data. Wide variety of sizes available.

BIRTHMARKED MATERIALS

MARKING DEVICES
THE PANNIER CORPORATION

203 Sandusky Street • Pittsburgh 12, Pa.

Offices: Los Angeles • Chicago • Cleveland • Philadelphia • Birmingham

Use postpaid card. Circle No. 535

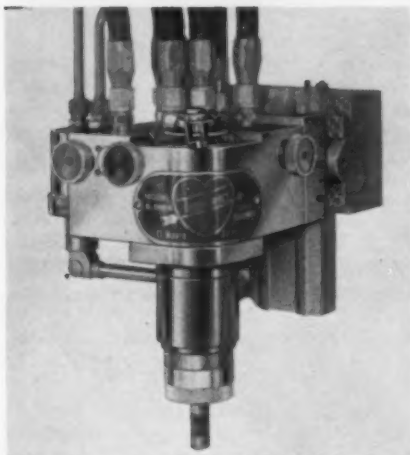
ASTE EXPOSITION . . .

Tools, carbide

SOLID CARBIDE HEAD TOOLS for general boring and bottoming and facing will be exhibited. The carbide head replaces the carbide tip and will be available to tool buyers at no extra cost. The new tools provide a full 210° of life. **Bokum Tool Co., Inc.**, Detroit, Mich. Space No. 414.

Use postpaid card. Circle No. 687

Tracer Controls



MODEL B-360A FULLY AUTOMATIC TRACER, (pictured), which will be in operation at the show, can be changed



Make **3**
hammers
AT ONCE!

It's the NEW, easy, economical, quick way to mold your own lead hammers on a production basis with "SHUR-GRIP" handles and this COOK production mold.

Write for circular and prices

LAWRENCE H. COOK, INC.

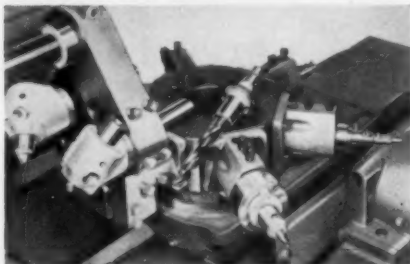
67 MASSASOIT AVENUE, EAST PROVIDENCE 14, R. I.

Use postpaid card. Circle No. 536

from fully automatic 360° to a pencil or manual 360° seconds. Another installation featured at the exhibit will be the TrueTrace ACA numerical control system that enables a manufacturer to machine straight cuts or complicated profiling operations at the push of a button. **True-Trace Sales Corp.**, El Monte, Calif. Space No. 2135.

Use postpaid card. Circle No. 888

Turning Heads



GENERAL PURPOSE TURNING HEADS, equipped with patented micrometer vernier toolpoint adjustment, (pictured), are designed to perform a variety of turning operations. The accurate adjustment and the extreme rigidity of the heads are said to permit heavy stock removal while holding to precise limits of accuracy. The Microbore system of pre-set tools, also on display eliminate trial cuts, and can be pre-set outside the machine to part dimensions. **DeVlieg Microbore Div.**, **DeVlieg Machine Co.**, Royal Oak, Mich. Space No. 1549.

Use postpaid card. Circle No. 889

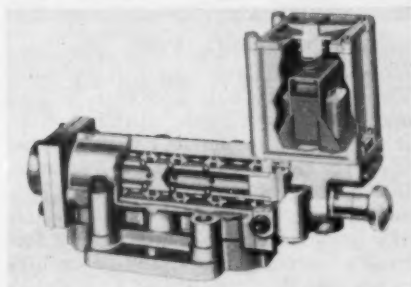
Valves

SILVER MODEL SPOOL SOLENOID PILOT VALVE is pictured mounted on a three-way inline and a four-way base-mounted valve. With a tested life of more than 25,000,000 cycles reported, this valve is one of the many Ross valves on exhibit. The Gold Model features an oil immersed solenoid with locking manual actuator, and claims



a tested life of more than 40 million cycles. Keynote features of the Ross Skyline series are long life and the interchangeability of the heads and bodies. **Ross Operating Valve Co., Detroit, Mich. Space No. 814.**

Use postpaid card. Circle No. 890



JIC CONTROL VALVES. Valve chambers of BJ Type Valves are formed by aluminum spacers held in accurate metal to metal abutment. This patented arrangement greatly simplifies internal construction. It permits the "O" rings and "U" packers to be supported on both the inside and outside diameters without placing any mechanical pressure on the packers and assures quick, easy servicing, if necessary, in the field. **C. B. Hunt & Son, Inc., Salem, Ohio. Space No. 529.**

Use postpaid card. Circle No. 891

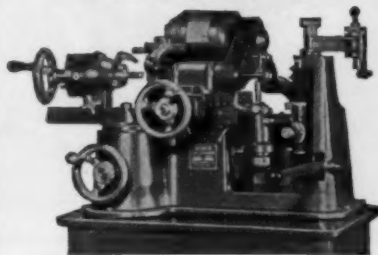


4-WAY VALVES, pilot-operated, solenoid controlled, are designed to provide all porting and positioning arrangements on circuits up to 3000 psi. They feature rugged drawn-steel solenoid covers and short solenoid power stroke. Capacities are 30 gpm and 5 gpm for the 3/4" pilot and 1/4" solenoid valves respectively. **Denison Eng'g. Div., American Brake Shoe Co., Columbus, Ohio. Space No. 1012.**

Use postpaid card. Circle No. 892

HYBCO TAP GRINDER

Sharpens Chamfers, Flutes
and Spiral Points



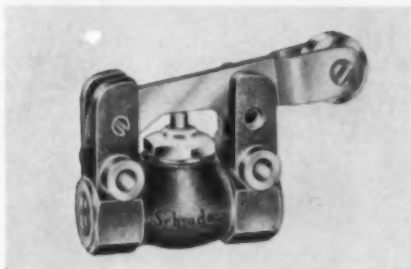
Model 1100

• Capacities No. 0 Machine Screw to
1 1/2" Hand Taps

HENRY P. BOGGIS & CO.
710 E. 163rd St. Cleveland 10, Ohio

Use postpaid card. Circle No. 537

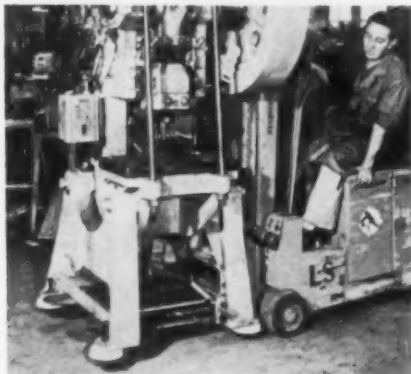
ASTE EXPOSITION . . .



TWO AND THREE-WAY VALVES include valves with roller levers. Designed for any cam actuation, the free turning roller riding on a cam provides long life by reducing friction. Both roller and lever are made of steel for durability and strength. **A. Schrader's Son Div., Scovill Mfg. Co., Brooklyn, N.Y. Space No. 1634.**

Use postpaid card. Circle No. 893

Vibration Control

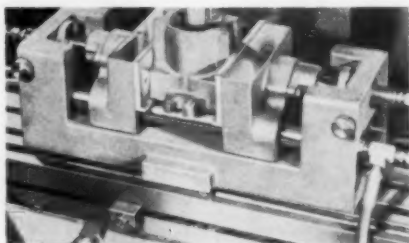


BARRY MOUNTS make possible quick installation and relocation of machines. Efficient isolation of shock by these machinery mounts prevents the machine from "walking," even though not anchored or lagged to the floor. A built-in leveling device permits quick, one-man leveling. To demonstrate the high degree of isolation from shock and

vibration afforded by the mounts, a punch press will be in operation during the show. Electronic instrumentation will be used to demonstrate the cushioning of shock and vibration. This cushioning effect permits impact machines to be operated side-by-side with precision machines, such as grinders. **Barry Controls Inc., Watertown, Mass. Space No. 716.**

Use postpaid card. Circle No. 894

Vises



SELF-CENTERING VISE. The new Model 77 Self-Centering, Air-Hydraulic Vise is a heavy duty unit with 7" jaws and with a maximum opening of 7". It is designed for holding parts varying in size or shape when the work requires the locating of a center or other predetermined points. The air-hydraulic vise is conveniently operated by a foot treadle which leaves the operator's hands free. The movement of the jaws is synchronized within a tolerance of .001" by a gear and rack concealed under the body casting. **Heinrich Tools, Inc., Racine, Wis. Space No. 1252.**

Use postpaid card. Circle No. 895

Wiping Tissues

SCOTT WIPERS are handy on assembly tables for removing all traces of dirt, grease, and corrosion from X-bearings at the Messinger Bearings, Inc., Phila. The paper wipers are lint-free, which enables workers to clean bearings faster, and leave a highly polished surface on the metal. **Scott Paper Co., In-**



dustrial Packaged Products Div.,
Chester, Pa. Space No. 1935.

Use postpaid card. Circle No. 696

Wear Plates

WEAR PLATES, designed for use wherever there is sliding contact between flat metal parts, are made of steel and electroplated with a bronze bearing surface. This is said to combine the low cost and ready machinability of steel with the long-wearing, non-seizing properties of a copper-tin bronze alloy. **Lamina Dies & Tools, Inc.**, Royal Oak, Mich. Space No. 929.

Use postpaid card. Circle No. 897

Work Holders



ANGULAR WORK HOLDING EQUIPMENT, designed to save setup time on angular grinding and inspection, has added ribbing on base plates and intermediate plates for greater strength and rigidity on both the Magna-Sine Mag-

netic sine plate and the non-magnetic sine plate. Another feature on both types is an improved locking device which claims positive, foolproof locking, unlocking, and relocking without sacrificing repetitive accuracy from one set-up to another. The Magna-Sine (illustrated) now incorporates a new O.S. Walker multi-pole fine division permanent magnet chuck which is said to use the greatest amount of permanent magnetic materials ever used in a magnetic chuck. **Omer E. Robbins Co.**, Detroit, Mich. Space No. 1661.

Use postpaid card. Circle No. 198

Wrenches



IMPACT WRENCH Model A-30-SA is a heavy-duty $\frac{3}{8}$ " bolt capacity pneumatic tool (reversible) which delivers considerably more power than previous models. It is said to perform equally well in tightening and removing bolts, nuts and screws and in stud-setting and tapping. A two-hammer impact mechanism affords excellent balance with minimum vibration. It is compact and light in weight. The tool is offered with $\frac{1}{2}$ " square shank or integral quick change chuck and with 3" and 6" spindle extensions, all having $\frac{3}{8}$ " bolt capacity and $\frac{5}{16}$ " tapping capacity. **Cleco Division, Reed Roller Bit Co.**, Houston, Texas. Space No. 1871.

Use postpaid card. Circle No. 899

The MARKET PLACE

Advertisements acceptable in **THE MARKET PLACE** include those for employment, sales services, production facilities, representation and related needs. **Rates: \$20 per column inch per insertion. Maximum size advertisement accepted in this section is three inches.**

Copy should reach us by the first of the month for next month's issue.

MACHINE and TOOL BLUE BOOK

A Hitchcock Publication

Wheaton, Ill

SOME MACHINE TOOL BUILDER

... can obtain competitive advantages and a profitable addition to his line by taking over the manufacture and sale of an efficient separator for removing metal particles, dirt, etc. from coolants and oils. Successful installations now operating at General Electric, Aluminum Company, American Chain and dozens of other plants. Frankly, our interests are in other industries but the growing application of this separator for machine tools prompted our decision to make arrangements for some metalworking manufacturer to make and sell this unit in that field ... while we concentrate on other equipment for the industries we know best. All replies confidential.

Write to Box 128

**c/o Machine and Tool Blue Book
Wheaton, Illinois**

.0003 EDGE FINDERS

**\$2.50
NEW**

**POSTPAID
except C.O.D.**

**\$10.00
DELUXE**



- Thousands have proven and accepted the Deluxe Model for years.
- Jumps sideways as shown when location is reached.
- New .500 dia. Model for larger Work only.



.200 Dia.

ADJUSTABLE VISE STOP



\$2.95

Hundreds Of Pieces To A .0003 Tolerance With This Hardened Vise Stop That is Adjustable In All Directions. Attach To Vise With one 1/4-20 Tapped Hole.

GLOVER MFG. CO.

422 Park Ave.

Meadville, Penna.

MANUFACTURE WITHOUT SALES PROBLEMS!

You manufacture and let an established sales company with know-how—merchandise and promote the sales of your products.

Free yourself to concentrate on design improvements—new developments—increased production and lower production costs.

Your accounts receivable ... **Bank Guaranteed**

Our interests are **MACHINE TOOLS.**

Will only consider the manufacturer who is financially strong ... progressive ... and not afraid to grow.

We are exhibiting at the **ASTE Tool Show** and can arrange to meet with interested principals for preliminary discussions.

All replies held in strictest confidence. Reply to Box 128.

c/o HITCHCOCK PUBLISHING COMPANY - WHEATON, ILL.

Riser Blocks Clausing Mills



1 1/4" 22.95 Complete
2 1/2" 25.95 with
3 1/2" 29.95 Belts
.00025
Accuracy

HORTON MACHINE WORKS

868 N. Prior Ave.
St. Paul 4, Minn.

Tool & Die Makers Supplies

District Representatives wanted to call on die and mold makers to sell A-1 line of tools and accessories, pantograph machines. Various territories open.

Address replies to Box 126

c/o MACHINE & TOOL BLUE BOOK

222 E. Willow

Wheaton, Ill.

Make your own Storage & Pallet Racks



with Amidon Fittings and one inch pipe.

Amidon Engineering Co.
ELYRIA 10, OHIO

CUTTERS SHARPENED

End Mills, Milling Cutters, Reamers, Drills, Taps, etc. High Speed Steel or Carbide

TOP QUALITY — LOW PRICES

1 WEEK DELIVERY

Flat Form Tools & Special Cutters to your specifications. Send for Catalog and Sharpening Prices.

LUND MFG. CO.

469 Elm Street
Biddeford, Maine

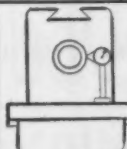
8 Music Hall Avenue
Waltham 54, Mass.

NEW END MILLS AT HALF PRICE

The catch? Just send us your old end mills and we will grind them down to the next standard size, relieve them fully, same as a new end mill, and mark them with the correct size—all for half the price of a new end mill.

CUTTING TOOLS, INC.

134 Seymour St.
Stratford, Conn.



Used by U.S. Armed Forces

MACHINE TOOL

RECONDITIONING

& THE ART OF HAND

SCRAPING (3rd printing)

Write for free folder describing illustrated book.

MACHINE TOOL PUBLICATIONS
215 Commerce Bldg.

East 4th Street

St. Paul 1, Minn.



**DIAL CALIPER
Repair Service**

ELISHA PENNIMAN

Precision Tools

Elmwood 10, Conn.



**LOW COST
RAPID TRAVERSE
FOR BRIDGEPORT MILLS**

UP-DOWN

10 1/2" PER MIN. AT

THE FLIP OF A SWITCH

NO DRILLING REQUIRED

Automatic Clutch disconnects motor when hand cranking

SAVE! MUSCLE, TIME, MONEY

IT IS WONDERFUL

Send for Literature

Horton Machine Works

868 N. PRIOR
ST. PAUL, MINN.

SALES REPRESENTATIVES OR DEALERS

Highly productive areas now available for immediate representation of unique **Rotary Power Filer and Turret Jaw Vises**. Favorable reception in trade journals and industry, sustained through strong promotional backing, insures excellent sales potential. Please state in first letter territory now actively covered and lines carried.

**HUDSON AUTOMATIC MACHINE
AND TOOL CO.**

137-139 38th St., UNION CITY, N.J.
ASTE BOOTH NO. 1055

Don't Overlook These Features

MACHINE AND TOOL
blue book

Quality Control. In this exclusive interview, H. Thomas Hollowell, Jr., president of Standard Pressed Steel Co., discusses the need for tools with minimum built-in error, training of personnel, what's involved in getting quality workmanship from employees, the importance of constant research and standardization activities.

Turning Operations at Allison. They're cutting turning costs and upping production at Allison Division of GMC. Each new tracer lathe replaces four turret-type lathes, single spindle chucks displace five turret lathes. Turret lathes still have their place, however, and the addition of hydraulic equipment enables one man to operate two turret lathes.

Boring and Sanding Problems. A problem facing Chance Vought Aircraft, Inc. was to speed up the facing and boring of their 10-foot rocket tubes. Another was how to get a perfectly flat seal for the wing skins.

Pneumatic Controls for Drill Press Set-ups. Laborious drilling work can be made semi-automatic or automatic and individual operations may be combined by equipping standard drill presses and drill press heads with pneumatic controls for spindle feed and for indexing, positioning and clamping the work.

Controlling Grinding Feeds. In the Torrington Company plant, an electronic actuator called an Inchworm motor corrects mechanical and human errors in the centerless grinding operation on precision anti-friction needle bearings before assembly.

Tape Controlled Milling for the Small Plant. A new magnetic tape-controlled profile and contour milling machine for small quantity production has been developed by the Morey Machinery Company and General Electric.

Tooling for Competition, is the theme of the ASTE Tool Show. Here is the complete program, including technical conferences and tours, and the array of products to be displayed are depicted and described.

107

114

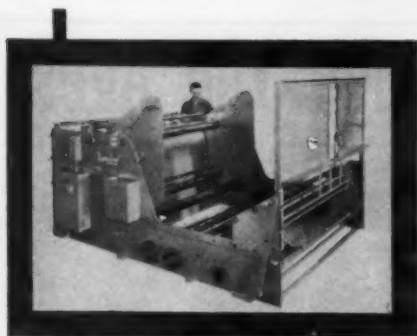
119

120

129

137

175



ROWE

COIL HANDLING EQUIPMENT

will increase your profits!

"Easy Load" COIL CRADLES. These motor driven automatic cradles are available to handle coils 200 lbs. x 6" wide x 15" O.D. through 20,000 lbs. x 60" wide x 60" O.D.

Rowe STRAIGHTENING MACHINES. For stocks to 30" wide, .020" to .190" thick. Feed rate variable 7' to 35' per min. standard with second range 22' to 110' and higher obtainable. Straightening and pinch rolls power driven.

Combination CRADLES & STANDARD STRAIGHTENERS. Available in many sizes and capacities. Single drive has HP rating equal to or greater than combined HP of separate cradle and straightener. Feed rate of cradle and straightener rolls identical.

Rowe PINCH ROLL ATTACHMENTS. For positive feeding of troublesome materials between .010" and .150" thick. Two powered pinch rolls.

Automatic STRAIGHTENING & FEEDING MACHINES. Eight models. Seven straightening rolls and four pinch rolls. Pre-selected feed lengths 1 inch to 7 feet. Four methods of feeding available.

Automatic ROLL FEEDS. Operation as high as 800 strokes per minute with extreme accuracy. Rolls hardened and ground. Mounted in ball bearings, factory sealed. Formsprag Clutch.

DISTRIBUTED IN ALL MAJOR TRADE AREAS.

Affiliate  Member

Associate  Member

Visit Our Booth No. 800 at A.S.T.E. Show

**ROWE MACHINERY & MANUFACTURING
COMPANY, INC. DALLAS, TEXAS**

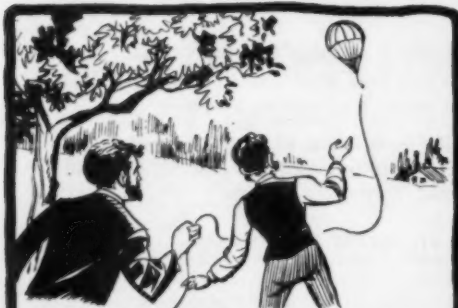
Mechanics Through The Ages



BEFORE

STARTING TO BUILD A TEMPLE, THE CRAFTSMEN OF AN-
CIENT EGYPT USUALLY BURIED SOME
OF THEIR TOOLS UNDER THE FOUND-
ATION STONE TO KEEP THE TEMPLE
GODS HAPPY!

AL REEF-



OTTMAR MERGENTHALER...

FAMED INVENTOR OF THE LINOTYPE
COMPOSING MACHINE, PRODUCED
SCIENTIFIC WEATHER INSTRUMENTS
FOR THE U.S. SIGNAL SERVICE WHEN HE
FIRST ARRIVED FROM GERMANY!

So Crude AND INEFFICI-
ENT WERE THE METAL WORKING
TOOLS THEN AVAILABLE, THAT
IT TOOK TWO MEN, WORKING
NIGHT AND DAY FOUR SOLID
MONTHS TO BORE THE 38½"
x 72" CYLINDER USED ON THE
STEAM ENGINE INSTALLED IN
PHILADELPHIA IN 1800 TO
PUMP WATER FOR THE CITY!

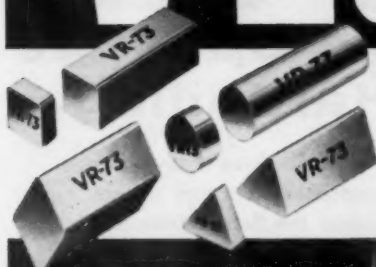




LOOK

Here's your answer to machining "Superalloys"

VR-73

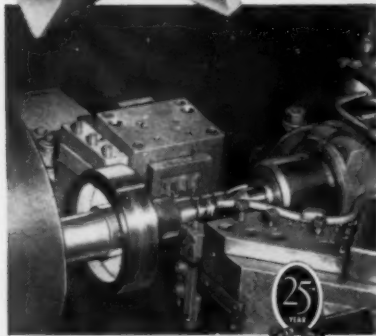


A Superior Steel-Cutting Cemented Carbide

- Hardness: 92.0 Rockwell "A"
- Transverse Rupture Strength: 225,000 psi
- Density: 11.68 gms. per cc.

VR-73—the newest V-R high quality steel-cutting carbide—combines higher edge strength with greater resistance to heat and abrasion—qualities never before available.

Outstanding for all types of general semi-finish and finish machining of the high tensile, high heat resistant alloys—the superalloys—for missiles, rockets and jet engines!



C-656-R



For complete information, call your local V-R representative or distributor.



Booth No. 1035

MANUFACTURERS OF: CEMENTED CARBIDES, TOOLHOLDERS, AND TANTUNG® CAST ALLOY CUTTING TOOLS



Vascoloy-Ramet Corporation

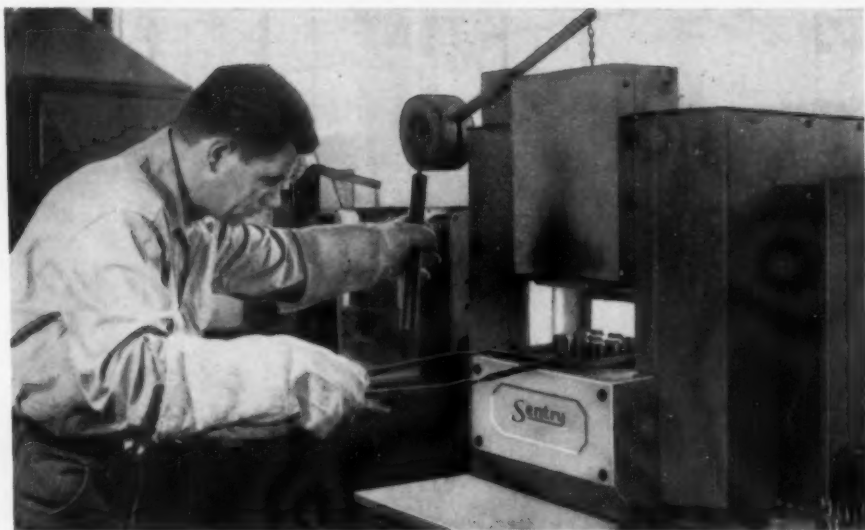
SUBSIDIARY OF FANSTEEL METALLURGICAL CORPORATION

844 Market Street • Waukegan, Illinois

Use postpaid card. Circle No. 539

April, 1958

403



How To Eliminate Spoilage In Your Tool Hardening

Scale, decarburization, carburization — all these three costly types of spoilage are due to your furnace atmosphere. But they do not occur in Sentry Model Y Furnaces because the Sentry Diamond Block Atmosphere is truly neutral for all steels hardening above 1700°F. It is the correct atmosphere for hardening tungsten high speed steel, it is the *only* satisfactory atmosphere for hardening cobalt and molybdenum steels. Your simple, sure method of eliminating spoilage is to install a Sentry Furnace!

For details, consult our catalog. You will find it packed with cost-saving, quality-improving information about Sentry equipment — a guide to better heat treating, giving *best* answers to your tool hardening problems. Send for it today.

585-7



Sentry

TRADEMARK

ELECTRIC FURNACES

Request Catalog E-13 • Write THE SENTRY CO., FOXBORO, MASS.

Visit us at Booth 436, the ASTE Show, May 1-8, Phila., Pa.

Use postpaid card. Circle No. 540

Index to Products in This Issue



Abrasive Belt Machines (See Grinding Machines, abrasive belt)
 Abrasive Cloth, Paper, Discs, Wheels, Stones, Belts, etc., 34, 36, 53, 207, 409
 Abrasives, rubber bonded, 34, 60, 207
 Actuators, 37
 Adapter Sleeves and Nuts, 188, 212
 Adapters, 10, 85, 188
 Air Line Parts, 327
 Air Tools, 195
 Alloys, 253
 Aluminum Fabrication, 132
 Aluminum Stock, 106, 253
 Angle Dressers, 343, 348
 Angle Iron Stands, 301
 Angle Plates (See: Plates, angle)
 Angles, 258
 Arbors, 187, 272, 384
 Assembly Machines, 33
 Assembly Tools, 296
 Automation Equipment, 21, 95, 131

B

Backrests, roller, 62
 Balancing Equipment, 370
 Bar Machines, automatic, 12, 32d, 273
 swiss type, 32d, 96d
 Barrel Finishing Equipment, 43
 Bars, 227
 steel (See: Steel, bars)
 Bases, machine, 303
 Bearings, 181, 221
 ball, 152
 roller, 152, 181
 thrust, 152, 181, 356
 Benches, work, 125, 270, 301
 Bending Machines & Equipment, 32b-c, 70, 74, 75, 96b-c, 378
 Bin Units, 270
 Bits, power insert, 271
 tool, 4, 192-b, 253, 271, 311, 351
 Blades, cut-off (See Tools, cutting-off, blade)
 hack saw, 331
 Blanks, 31, 192b
 Blocks, pillow, 221
 step, 8-9, 227, 290
 V, 31, 301, 348
 Bolts, 290, 348
 eye, 4
 Books, 415
 Boring (service), 350, 385
 Boring Bars and Tools, 50, 76, 279, 302
 Boring, Drilling, Milling Machines, 47
 Boring, Facing Tools, 310
 Boring Heads, 72, 284, 310
 Boring Machines, 32, 47, 50, 131
 jig, 42, 47, 79, 169, 316
 Boring Mills, 26-27, 179, 361
 Boring Spindles, 82
 Boring Tools, 37, 174, 227
 Brakes, 237
 Broaches, 87, 282
 Broaching Machines, 8-9
 Broaching Service, 337
 Burnishing Machines, 94
 Burr, 32a-b, 55, 192b
 Bushings, 37, 56, 83, 103, 192b
 Bushings, carbide insert, 192b
 drill jig, 83, 192b, 212
 drill, miniature, 83

C

Calipers, 307, 372
 Cam Milling (service), 385
 Cams, 290, 373, 379
 Carbide Stock, 253, 403
 Carbide Tools (See: Tools, carbide)
 Cemented Carbides, 403

Centers, bullnose, 308
 Centers, live, 198, 293, 366, 384
 Chain Tongs, 4
 Chains, 221
 Chamfering Tools (See: Tools, chamfering)
 Chip Removers, 356
 Chucks, 8-9, 58-59, 192b, 272, 281, 286, 310, 348
 air-operated, 192-a-b
 keyless, 194
 lathe, 139
 magnetic, 140, 310, 348
 power, 139, 229
 quick-change, 187
 Clamps, 4, 29d, 365, 384
 air-operated, 46
 fixture, 319
 quick-change, 187
 power, 139, 229
 strap, 290, 348
 toggle, 290, 319
 Clutches, 237, 407
 friction, 237
 Coatings, plastic, 348
 protective, 266, 303
 Coll Cradles, 275, 401
 Collet Adapters, 10
 Collet Closures, 368
 Collets, 149, 160b, 187, 272, 281, 329, 416
 Comparators, dial, 209
 optical, 42, 197, 235, 349
 Compounds (See separate listings)
 Controls, electrical, 32a, 96a, 305
 mechanical, 32a, 96a, 305
 press, shear, 32a, 96a, 305
 Coolant Mist Generators, 190, 299
 Coolant Systems, 190, 299, 352
 Coolants (See: Cutting Fluids)
 Counterbores, 37, 76, 174, 295
 Countersinks, 37, 73, 174, 279
 Couplings, 221
 Cut-Off Blades, (See: Tools, cutting-off, blade)
 Cut-Off Machines, 30, 78, 96b-c, 196, 269, 358
 Cut-Off Wheels, (See: Grinding Wheels, cut-off)
 Cutters, 67, 66-69, 163, 273, 358, 373, 378
 Cutting Fluids, oils, 14-15, 105, 189
 Cutting Machines, 32
 Cutting Tools (See tool section)
 Cylinders, hydraulic, pneumatic, 70, 96

D

Demagnetizers, 348
 Dial Indicators, 143, 209
 Diamond Holders, 51
 Diamond Tools, 302, 309
 Diamond Wheel Dressers, 79, 302, 309, 384
 Die Casting Machines, 12
 Die Holders, 62
 Die Making Machines, 45
 Die Sets, 277, 372
 Die Stock, 32b-b, 181, 253
 Dies, 21, 93, 95, 192-b, 253, 358, 378, 413
 Dies, carbide, 23, 192b
 forging, 45
 perforating and magnetic, 93, 95
 lamination, 103
 press brake, 164
 progressive, 103
 Dividers, (See: Calipers)
 Dividing Heads, 8-9
 Dogs, lathe, 4
 milling machine, 4
 Dressers, wheel, 70, 302, 309, 384
 Drill Guides (See: Bushings, drill jig)
 Drill Heads, 184, 369
 multiple spindle, 335, 369
 Drill Jigs, 56, 300
 Drilling Attachments, 50, 262, 270, 317, 335, 343, 369
 multiple spindle, 317, 335, 369

Drilling Machines, 38, 47, 75, 99, 131, 267, 361
multiple spindles, 32a, 33
radial, Inside Back Cover, 1, 32, 54, 151, 179, 333
turret, 77
upright, 32, 33
Drilling Units, automatic, 260
Drills, 18-19, 55, 73, 149, 174, 200, 261, 360
carbide, 279
core, 67
twist, 18-19, 55, 149
Drivers, end mill, 20
Drives, hydraulic, 85
machine tool, 8-9
master, 209
Duplicating Attachments, 170
Duplicating Machines, 32b-c, 96d
Dust Collectors, 39, 203, 217, 291, 341
Dye, layout, 363, 376
Edge Finders, 398
End Mills (See: Milling Machine Cutters)
Engravers, 65, 198, 280, 309
Engraving Tools, 280, 309
Extractors, pipe & stud, 182

F

Facing Heads, 310, 352
Facing Tools (See: Tools, facing)
Feeders, parts, 52, 199
work, 88, 275, 401
Feeds, automatic, 199
bar, 199
roll, 401
Files, 32a-b, 34
rotary, 279
Filing Machines, 386
Filters, 327
Fixture Keys, 290
Fixture Locks, 290
Fixtures, cutter grinder, 265
Flanging Machines, 355
Flat Stock, ground, 331
Flexible Shaft Machines, 195
Floor Cleaners, 304
Fluid Power Maintenance, 295
Form Relieving Fixtures, Outside Back Cover
Furnaces, heat-treating, 60, 150, 173, 186, 315, 383, 404

G

Gage Blocks, 28, 213
carbide, 213
Gage Supplies, 213
Gages, 90, 144-145, 167, 260, 273, 274, 345, 362
carbide, 28
cylindrical, 167
dial, 48-49, 143, 200
dial bore, 48-49
height, 144-145, 213, 345, 362
internal, 209, 274
micrometer, 48-49
plug, 28, 213
ring, 213
snap, 209
thread, 167
Gaging Equipment, 210, 213
Gear Cutting Machines, 42, 87
Gear Hobbing Machines, 42, 68-69, 123
Gear Measuring Equipment, 28
Gear Shaping Machines, 40-41, 87
Gears, 221, 260, 290, 356, 364
Geneva, 379
worm, 364
Grinders, portable, 195, 292
Grinding (service), 385
Grinding Attachments, 289
Grinding Machines, 94, 45, 94, 230, 273
abrasive belt, 325
bench, 94, 165, 341, 359
cutting, 158
cylindrical, 32, 239
disc, 325, 341
drill, 306, 341
flute, 341
hand, 158, 292
heavy duty, 170
internal, 239
jig, 21, 79, 95
pedestal, 165, 341

profile, 217
saw, 204
snagging, 341
surface, 139, 158, 165, 170, 179, 197, 350
tap, 305
tool & cutter, 8-9, 32d, 42, 47, 70, 96d, 158, 165, 179, 197, 204, 306, 350, Outside Back Cover
wet or dry, 136, 341
Grinding Wheels, 8-9, 34, 60, 207, 243
cut-off, 53, 60, 207
Grooving Tools, 410
Guide Pins, 103

H

Hammers, lead, 394
Handles, crank, 4
machine, 4
Hardness Testing Equipment, 42
Hinges, 354
Hob Sharpeners, 68-69
Hobs, 68-69
Holders, back rest, 62
cut-off blade, 62
dial indicator, 367
die, 62
drill, tap, reamer, 62
flowing, 85
magnetic, 353
turret backrest, 62
work (See: Work Holders)
Holding Tools, 4
Hole Location Accessories, 79, 274
Honing Machines, 7, 71, 160a
Honing Tools, 36
Hooks, coil, 4

I

Index Attachments, 8-9
Index Fixtures & Tools, 282
Index Tables, 276
Indexing Machines, 379
Inspection & Measuring Devices, 42, 90, 188, 235, 260, 261, 274, 307, 345, 349, 372
Inspection Units, 42

J

Jaws, chuck, 260
Jig Boring (service), 385
Jig Feet, double end & screw type, 290
screw & press type, 290
Jigs & Fixtures, 33

K

Keyseaters, 372
Knives, circular, 73
Knurling Tools (See: Tools, knurling)

L

Lapping Machines, 37
Lapping Service, 28
Laps, 261
Lathe Attachments, 179
Lathes, Inside Back Cover, 47, 51, 239, 325, 361
bench, 2
contour, duplicating, tracer-controlled, 99
engine, toolroom, 99, 179
gap, 47, 51, 99, 201
speed, 2
tool, gage-makers, 2, 179, 201, 239
turret, 2, 35, 214
Layout Dye, 303, 376
Levels, precision, 370
Light Wave Equipment, 28
Lighting Equipment, 329
Lubricants, 14-15, 180, 189, 280, 358
Lubricators, 327

M

Machine Rebuilding, 314
Machine Tool Attachments, 273, 276
Magnetic Bases, 31
Marking Devices, stamps, 157, 280, 312, 393
Marking Equipment, 280, 284, 393
Marking Machines, 157, 179, 198, 312
Master Pushers, 160b
Master Setting Discs, 28



Check your needs!

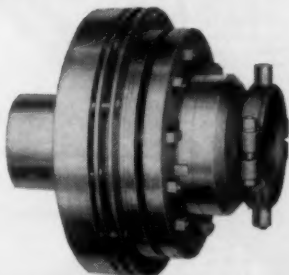
Conway

"the Clutch of Robust Refinement"

**NOW — MORE THAN EVER — YOU NEED
CLUTCHES TO SAVE ON POWER TRANSMISSION**

Quality first, of course . . . but **ECONOMY**, too . . . must be watchwords in every operation when costs must be scrutinized minutely.

Your greatest protection . . . your greatest ally in keeping quality up and costs down are Conway Clutches. Simplicity of design with remarkable engineering precision, interchangeable parts of basic materials, flexibility and utter dependability will work to your profit.



WRITE FOR NEW BULLETINS
FOR EVERY TYPE OF INDUSTRY

THE **Conway** CLUTCH COMPANY
"the Clutch of Robust Refinement"

1105 Marshall St.

Cincinnati 25, Ohio

Metal Cleaning Equipment, 66
Metal Forming Machines, 203
Micrometer Dial Gages, 48-49
Micrometers, 48-49
 light wave, 28
Microscopes, 42
Milling Machine Attachments, 8-9, 32d, 276
Milling Machine Cutters, 18-19, 55, 67, 68-69, 73,
 132, 135, 168, 168, 172, 174, 273, 279, 351,
 375, 381
Milling Machines, 8-9, 44, 47, 63, 70, 84, 96d,
 211, 214, 273, 323, 361
 bench, 359
 contour, 148
 horizontal, 32d, 47, 70, 96d, 179
 hydraulic, 211
 tool room, 44, 359
 tracer controlled, 32d, 143
 vertical, 32d, 47, 70, 96d, 179, 225
Mills, 247, 275
 bellow, 172
Molds, lead hammer, plastic, 394
Motors, electric, 32-a, 96-a
 shaftless, 231
Mounting Equipment, 155, 313

N

Nibblers, portable, 32
Nibbling Machines, 32
Nippers, 219
Notching Equipment, 32b-c, 75, 96b-c, 358
Notching Machines, 358
Numbering Machines, 280, 312
Nut Tappers, 33
Nuts, 290
 coupling, 290

O

Optical Flats, 28
Optical Inspection Devices, 235

P

Pantographs, 96d, 148, 309
Parallel, 31, 258, 301
Pins, 271
 taper, 371
Pipe Tools, 4
Pipe & Tube Mills, 247
Plastics, molded, 166
Plate Saws, 325
Plates, 8-9, 297, 301
 angle, 8-9, 276, 297, 301
 bench, 297, 301
 floor, 301
 lapping, 297, 301
 layout, 297, 301
 steel, 166, 297
 surface, 258, 297, 301
Pliers, 319
Pliers, Plungers, index, 46
Polishing Machines, 325
Portable Air Tools, 195
Portable Electric Tools, 32d
Porting Tools, 274
Press Brakes, 29, 32b-c, 70, 96b-c
Press Room Equipment, 237, 278, 279
Presses, air, 84, 223, 268
 arbor, 84, 223, 368
 drill, 84, 257
 foot, 84
 gap type, 223, 264
 guided platen, 223
 hand, 223
 horn, 264
 hydraulic, 96a, 223, 233
 movable frame, 223
 O.B.I., 259
 power, (punch), 32b-c, 84, 96b-c, 233, 251, 264,
 275, 323
 single crank, 251
 straight side, 264
 straight side, double crank, 251
 turret punch, 70, 249
Projectors, 349
Pumps, 273
 coolant & lubricant, 96a
Punch Shapers, 364

Punch-Shear-Notchers, 32b-c
Punches, 272
Punching Equipment, 75, 179
Pusher Pads, carbide, 160b
Pushers, 160b, 294, 416

R

Racks, 264
 storage, for bar stock, 399
Radius Dressers, 343, 348
Radius Tools, 302
Railroad Pins and Bushings, 37
Reamers, 68-69, 73, 174, 210, 279, 351, 409
 adjustable, 89, 210, 351
Reciprocating Tools, 286
Reels, stock, 203
Refractories, 34
Regulators, 325
Riveting Machines, 306
Rod Parters, 32b-c
Roll Feeds, 287, 401
Roll Forming Machines, 30
Rollers, 32b-c, 96b-c
Rust Preventives, 393

S

Safety Devices, 305
Saw Blades, band, Inside Front Cover, 32a-b
 circular, 208
 cut-off, 32a-b, 73, 208
 hack, 185
 segmental, 32
 slitting, 57, 73, 208
Saw Sharpeners, 32, 350
Sawing Machines, 378, 386
 band, Inside Front Cover, 84, 196
 cut-off (See Cut-off Machines)
Saws, metal cutting, 266, 325, 331
Scales, 370
Screw Drivers, power, 195
Screw Machines (See: Bar Machines, automatic)
Screws, 290, 364
 cap, set, socket, machine, 321
Services: Boring, Grinding, Lapping, Milling,
 Repairing, etc., 385
Setup Tools, 4
Shafts, 260
Shapers, 11, 29, 40-41, 214, 325, 364
Shear Blades, 318
Shearing Machines, 29, 32b-c, 75, 96b-c, 179, 355
Shears, bench, 32b-c
 hand, 32b-c, 294
 lever, 294
 power squaring, 84
Sheets, steel, 166
Sleeves, 272
Slitting Cutters, 73
Slotters, 73
Socket Screw Products, 288, 369
Sockets, 4, 272
Special Machinery, 8-9, 21, 95, 131
Special Tools (See: Tools, special)
Speed Reducers, 221, 299, 356
Spindle Extensions, 85
Spindles, 86
 boring, 37, 82, 86
 drilling, 82, 85
 grinding, 37, 86
 milling, 86
Spotters, 272
Spring Coilers, 32b-c, 96b-c, 219
Spring Coiling Accessories, 219
Sprockets, 221, 356
Stamps, steel, 393
Staple Making Machines, 203
Steel, bars, 22, 32a-b, 48-49, 106
 plastic, 329
 tool, 263
Steel Stock, 22, 32a-b, 48-49, 106, 263, 371
Step Blocks, 290
 adjustable, 290
Step Tools, 289
Stock Reels (See: Reels, stock)
Stones, oil & sharpening, 34
Stops, stock, 62
Straight Edges, 258, 301
Straighteners, 401
Straightening Equipment, 401

Straightening Rolls, 90
Structurals, 106
Stud Sets, 290
Studs, 290
Surface Plates (See: Plates, surface)
Swaging Machines, 128

T

Tables, drill, 245
elevating, adjustable, portable, 125, 183, 348
rotary index, 21, 79, 95, 276, 339, 382
Tap, Die Holders, 92
Tap Cartridges, 98
Tap Drivers, 85
Tap Holders, 61, 62
Tap Sharpeners, 241
Tape, pressure sensitive, 34
Taper Pins, 371
Tappers, 262, 317
automatic reverse, 184
Tapping Attachments, 262, 335
Tapping Heads, 33, 335
Tapping Machines, 33, 127, 267, 369
Tapping Units, 335
Taps, 16-17, 18-19, 106, 316, 413
Templates, 290
Test Indicators, 143
Thread Grinding, 302, 376
Thread Measuring Wires, 28
Thread Rolling Heads, 24-25
Thread Rolling Machines, 100
Threading Machines, 33
Tool Bits (See Bits, tool)
Tool Holders, 4, 61, 62, 192b, 202, 253, 262, 271, 343, 348, 351
Toolmakers' Instruments, 44, 348
Tool Posts, 62
Tool Sharpening Machines, 45
Tool Shows, 80-81, 278
Tool Steel (See: Steel, tool)
Tools, carbide, 4, 55, 67, 73, 174, 192b, 208, 279,

348, 351
chamfering, 64, 76
cutting-off, blade, 4, 57, 64, 68-69, 73, 192b, 331
facing, 76
form, circular, 64, 73, 373
knurling, 62, 348
recessing, 62
special, 4
Transfer Punches, 272
Transmission Products, 221
Trucks, hand, 125
Tube Fabricating Machines, 30
Tubing, 106
Turn Tables, 379
Turning Heads, 155
Turning Machines, 359
Turning Tools, 229, 302
Turret Tapping Attachments, 317, 335

V

Valves, 70, 96
Vise Stops, adjustable, 308
Vises, air powered, 276, 307, 348
bench and machine, 276, 304, 307, 347, 359, 384, 389

W

Washers, 290
Way Curtains, 346
Way Wipers, 255
Ways, 318
Wear Plates, 103, 192b
Welding Equipment & Supplies, 13, 301, 353
Wire Forming Machines, 3, 203
Wire Straightening & Cutting Machines, 203, 392
Wires, measuring, 28, 348
Work Drivers, 285
Work Holders, 296, 319, 348
Wrenches, 4, 365
automatic, 365

144 ABRASIVE WHEELS & POINTS

Brand New
Perfect First
Quality
Mounted on 1/2"
Steel Mandrels

ONLY
\$28.50

Postpaid
in U.S.A.
Imported



List value
\$93.60
Save
up to
\$65.10

COMPLETE IN HANDY, STURDY
CONTAINER AT NO EXTRA COST

If after 10 days you are not fully convinced that this is the greatest wheel and point value in the industry, return the set at no cost or obligation on your part.

Illustrated Free Catalog on Request

SCHUPACK SUPPLY CO. DEPT. MB-7
7331 Cottage Grove Ave. Chicago 19, Illinois

Use postpaid card. Circle No. 542

April, 1958

ALL TYPES OF REAMERS

... THE RIGHT
ONE FOR
YOUR
JOB

Piloted

Special Lengths

Special Diameters

Combination Cutting

Schmarje

CARBIDE REAMERS
STRAIGHT OR TAPER SHANK

Send drawings for Prompt Quotations

SCHMARJE TOOL COMPANY

Carbide Reamers • Form Tools
MUSCATINE 1, IOWA

Use postpaid card. Circle No. 543

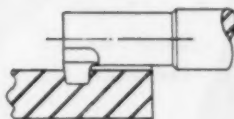
Now Available from stock **TWO NEW PRODUCTS**

—made to standard specifications of ring manufacturers and available from stock. High speed steel and carbide tipped.

O-RING GROOVING TOOLS

Bokum grooving tools produce the precise groove needed for O-rings—meet the exact specifications of ring manufacturers. 15 different tools are available from stock for single O-rings, or for O-rings requiring one or two back ups. Larger diameters feature 2-piece construction.

Write for Catalog O-R.



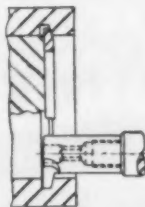
SEE THE BOKUM EXHIBIT
BOOTH NO. 414 A.S.T.E.
SHOW, MAY 1-8



TRADE MARK REG. U.S. PAT. OFF.

RETAINING RING GROOVING TOOLS

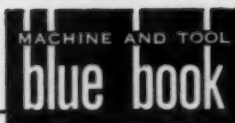
A range of 29 tools is available to cut exact grooves for standard or inverted retaining rings, bowed, beveled and self-locking retaining rings. 2-piece construction on larger diameters permits use of any length bar to compensate for the distance of the groove from the end of the work piece. Write for Catalog R-R.



BOKUM TOOL CO. INC.

14775 Wildemere Ave.
Detroit 38, Mich.

Index to Advertisers



A

A. K. Tool Company	350
Aaron Machinery Company	47
Abart Gear & Machinery Company	299
Accurate Bushing Company	56
Ace Drill Bushing Company	83
Acme-Danneman Company	277-372
(Danneman Die Set Div.)	
Acme Tool Corp.	286
Acromark Company	178
Adamas Carbide Corporation	192-B
Adcock & Shipley, Ltd.	63
Adjustable Clamp Company	365
Aetna Manufacturing Company	190
Aget Manufacturing Company	205
Air Transport Equipment Company	261
Alina Corporation	143
Allegheny-Ludlum Steel Corp.	271
Allen Collet Manufacturing Company	416
Alloy Socket Screw Company	369
Allstate Diamond Products, Inc.	309
Alvin Products, Inc.	329
Alzmetall Company	257
American Machine & Foundry Co.	194
American Roller Die Corporation	30
American Society of Tool Engineers	80-81
American Tool Works Co.	Inside Back Cover
Amidon Engineering Company	399
Anderson Bros. Manufacturing Co.	233
Antares Instrument, Inc.	309
Anton Machine Works	31
Apex Tool & Cutter Company	351
Applied Mechanics Corporation	294
Arcanum Tool Company	795
Armstrong Blum Mfg. Co.	Inside Front Cover
Armstrong Bros. Tool Company	4
Associated Technical Sales	299
(Coolie Toolie Div.)	
Atlas Press Company	201
(Clausing Div.)	
Atrax Company	55
Aurora Equipment Company	270
(Equipito Div.)	
Auto Moulding & Mfg. Company	354

B

Baker Bros., Inc.	131
Baldor Electric Company	165
Barber-Colman Company	68-69
Barnes Drill Company	36
Barry Controls, Inc.	313
Bath & Company, Inc., John	16-17
Bearings, Inc.	181
Beaver Gear Works, Inc.	364
Bedford Gear & Machine Products, Inc.	260
Behr-Manning Company	34
Bellows Company	268
Benchmark Manufacturing Co.	275
Benco Collet Manufacturing Co.	160-B
Blake Company, Inc., Edward	241
Blanchard Machine Company	243
Blue Valley Machine & Mfg. Co.	355
Boggis & Company, Henry P.	395
Bokum Tool Company	410
Boston Gear Works	221
Boyar-Schultz Corp.	217

Bremil Manufacturing Company	294
Brightboy Industrial Division	60
(Weldon Roberts Rubber Co.)	
Brookfield, Inc.	202
Brown & Sharpe Mfg. Co.	48-49, 273
Buck Tool Company	229
Buffalo Forge Company	75
Burgmaster Corporation	77
Burkhard Brothers, Inc.	314
Busch Company, J. C.	258

C

Cadillac Gage Company	90
Capewell Manufacturing Company	185
Carlton Machine Tool Company	54
Cawi Machine Company	350
Challenge Machinery Company	301
Chandler Tool Company	310
Chicago Gear Works	356
Chicago Latrobe	174
Chicago Manufacturing & Distrib. Co.	180
Chicago Quadrill Company	317
Chicago Rawhide Manufacturing Co.	255
Chicago Tool & Engrg. Company	276
Cincinnati Gilbert Machine Tool Co.	1, 382
Cincinnati Lathe & Tool Company	99
Cincinnati Milling Machine Company	8-9
Cincinnati Milling Machine Company	105
(Cimcool Div.)	
Cincinnati Shaper Company	29
Circular Tool Company	73
Clausing	201
(Div. of Atlas Press Co.)	
Cleveland Automatic Machine Company	12
Cleveland Instrument Company	345
Clippert Diamond Tool Company	302
Collis Company	272
Commander Manufacturing Company	335
Conant Broach Company	337
Concentric Tool Corporation	198
Continental Drill Corporation	200
Continental Tool Works Div.	37
(Ex-Cell-O Corp.)	
Conway Clutch Company	407
Cook, Inc., Lawrence H.	394
Cooley Electric Manufacturing Corp.	66
Coolie Toolie Division	299
(Assoc. Tech. Sales)	
Covel Manufacturing Company	197
Criterion Machine Works	72
Crucible Steel Co. of America	263
Curtvit Corporation	368
Cushman Chuck Company	192-A
Cutting Tools, Inc.	399

D

Dake Corporation	223
Danneman Die Set Division	277, 372
(Acme Danneman Co.)	
Darco Industries	280, 362
Davis Keyseater Company	372
Dazor Manufacturing Corporation	283
Defiance Machine & Tool Company	312
Denison Engineering Company	96-A

DeVlieg Microbore Division	155
(Div. DeVlieg Machine Company)	
Disston Division	266
(H. K. Porter Co.)	
Dixie Tool Industries	381
Dixon Automatic Tool Company, Inc.	296
Donovan Manufacturing Company	359
Dreis & Krump Manufacturing Co.	164
Dremel Manufacturing Company	292
Durant Tool Supply Company	278
Dykem Company	376

E

East Shore Machine Products Company	282
Eclipse Counterbore Company	67
Economy Tool & Machine Company	212
Eisler Engineering Co., Inc.	379
Elox Corp. of Michigan	45
Empire Tool Company	61
Equipto Division	270
(Aurora Equipment Co.)	
Errington Mechanical Labs.	262
Ex-Cell-O Corporation	37
(Continental Tool Works Div.)	

F

Famco Machine Company	84
Fawick Corporation	237
(Fawick Airflex Div.)	
Feedall, Inc.	199
Fellows Gear Shaper Company	40-41
Fen Machine Company	365
Fenn Manufacturing Company	128
Fiske Bros. Refining Company	189
Flynn Manufacturing Company	284
Fostoria Pressed Steel Corporation	320
Fulmer Company, C. Allen	7

G

Galland-Henning Nopak Division	96
Gallmeyer & Livingston Company	170
Gay-Lee Company	208
George Machinery Company, James W.	32
German-American Trade Promotion Office	278
Gisholt Machine Company	35
Glover Manufacturing Company	398
Gorton Machine Company, Geo.	96-D
Grant Manufacturing & Machine Co.	306
Graymills Corporation	352
Greaves Machine Tool Company	44
Green Instrument Company, Inc.	65
Greenard Arbor Press Company	368
Greenlee Bros. & Company	88
Grob, Inc.	386

H

Hamilton Tool Company	123, 125, 127
Hammond Machinery Builders, Inc.	39
Harrig Manufacturing Corporation	23
Harms Company, Perc E.	303
Harrison & Sons, Ltd., T. S.	51
Helman Manufacturing Company	356
Heller Tool Company	32-A-B
Himoff Machine Company	385
Hisey-Wolf Machine Company	341
Hitchcock Publishing Co.	298
(Industrial Services Div.)	
Hones, Inc., Chas. A.	150
Horspool & Romine Manufacturing Co.	316
Horton Machine Works	399
Houston Grinding & Manufacturing Co.	308
Hudson Automatic Machine & Tool Co.	399
Huppert Company, H. K.	363

Index Machine Company	225
Inter-Lakes Engineering Co.	303

J

J & S Tool Company, Inc.	384
Jacobs Manufacturing Company	58-59
Jarvis Corporation	279
Jersey Manufacturing Company	364, 369
Johansson Company, I. O.	333
Johnson & Bassett, Inc.	148
Johnson Gas Appliance Company	173
Johnson Machine & Press Corp.	264
Jones & Lamson Machine Company	235, 281

K

Kaufman Manufacturing Company	267
Kenco Manufacturing Company	323
Kennametal, Inc.	191
Kent-Owens Machine Company	211
Kidde Precision Tool Corporation	290, 316

L

L & L Manufacturing Company	315
L & J Press Corporation	251
Lamina Dies & Tools, Inc.	103
Landis Machine Company	100
Lapeer Manufacturing Company	46
Lehmann Boring Tool Division	227
Leland-Gifford Company	38
Levin & Son, Inc., Louis	149
Lewthwaite Machine Company, T. H.	373
Lincoln Electric Company	13
Linley Brothers Company	373
Lucifer Furnaces, Inc.	186
Lund Manufacturing Co.	399

M

M. B. Products, Inc.	327
Machine Products Corporation	297
Machine Tool Publications	399
Magna-Lock Corporation	140
Mail Tool Company	195
Manhattan Rubber Division	207
(Raybestos-Manhattan, Inc.)	
Martin Machine Company, J. E.	347
Maserati Corporation of America	179
Mathewson Machine Works	300
McCroskey Tool Corporation	76
McDonough Manufacturing Company	306
Melin Tool Company, Inc.	135
Metal Carbides Corporation	253
Mettler Machine Tool, Inc.	392
Midwest Tool & Engineering Co.	183
Minster Machine Company	259
Modern Machine Tool Company	245
Montgomery & Company, Inc.	348
Moore Special Tool Company	79
Morse Twist Drill & Machine Co.	18-19
Motch & Merryweather Co.	57
Mummert-Dixon Company	352

N

National Acme Co.	24-25
National Broach & Machine Company	87
Nebel Machine Tool Corporation	11
(Smith & Mills Shaper Div.)	
Neill & Company, Ltd., James	353
Neise, Karl A.	307, 339, 372
New Britain Tool & Manufacturing Co.	304
Nibarger Tool Service	373
Nielsen, Inc.	366
Nilson Machine Company, A. H.	203
Noble & Westbrook Manufacturing Co.	157
Norma-Hoffman Bearings Corporation	152



WHY WAIT FOR SPECIAL TAPS?

*... Has them IN STOCK
for IMMEDIATE DELIVERY!*

HIGH SPEED SPECIAL RIGHT HAND TAPS

SIZE	THREAD	SIZE	THREAD	SIZE	THREAD
00	96	15/32	32	1-3/4	3-8-10-12-14-16-18-20-24
0	70-72-76-80	1/2	12-13-14-16-18-20-24-27-28-32-36-40	1-13/16	5-8-10-12-14-16-18-20-24
1	48-56-64-72-80-90	9/16	12-14-16-18-20-24-27-28	1-7/8	5-8-10-12-14-16-18-20-24
2	48-52-54-56-64-72-80	5/8	10-11-12-14-16-18-20-24-27-28-32-36-40	1-15/16	5-8-10-12-14-16-18-20-24
3	40-44-48-56-60-64	11/16	10-11-12-14-16-18-20-24-27-28-32-40	4-1/2	8-10-12-14-16-18-20
4	32-36-40-48-56-60-64-72-80	3/4	10-11-12-14-16-18-20-24-27-28-30-32-36-40	2-1/16	12-14-16
5	30-32-36-40-44-48-56-64-80	13/16	10-12-14-16-18-20-24-27-32	2-1/8	8-10-12-14-16-18-20
6	30-32-36-40-48-56-60-64-72-80	7/8	9-10-12-14-16-18-20-24-27-28-32-40	2-3/16	10-12-14-16
7	30-32-36-40-48-64	15/16	8-9-10-12-14-16-18-20-24-27-32-40	2-1/4	4 1/2-8-10-12-14-16-18
8	24-30-36-40-44-48-56-60-64-80	1	8-10-12-14-16-18-20-24-27-32-40	2-5/16	12-14-16-18
9	24-28-32-36-40	1-1/16	8-10-12-14-16-18-20-24-27-32-40	2-3/8	10-12-14-16-18
10	20-22-24-28-30-32-36-40-56-60	1-1/8	7-8-10-12-14-16-18-20-24-27-32-36	2-1/2	4-8-10-12-14-16-18
12	20-24-28-32-40	1-3/16	7-8-10-12-14-16-18-20-24-27-32	2-9/16	12-14
14	20-24-28-32-40	1-1/4	7-8-10-12-14-16-18-20-24-27-32	2-5/8	8-10-12-14-16-18
1/16	60-64-72	1-5/16	6-8-10-12-14-16-18-20-24-27-32	2-3/4	4-8-10-12-14-16
5/64	72	1-3/8	6-8-10-12-14-16-18-20-24-27-32	2-7/8	8-10-12-14-16
3/32	36-48	1-7/16	8-10-12-14-16-18-20-24-27-32	3	4-8-10-12-14-16
1/8	32-36-40-44-48	1-1/2	6-8-10-12-14-16-18-20-24-27-32	3 1/4	8-10-12-14-16
5/32	32-36-40-44-48	1-9/16	12-14-16-18-20-24	3-1/2	8-10-12-14-16
3/16	20-24-28-32-36-40-48	1-5/8	8 1/2-10-12-14-16-18-20-24	3-3/4	4-8-10-12-14
7/32	20-24-28-32-36-40	1-11/16	6-8-10-12-14-16-18-20-24	4	8-10-12
1/4	14-16-18-22-24-26-27-28-30-32-36-40-48-56-64				
9/32	18-20-24-27-28-32-40-64				
5/16	18-18-20-22-24-26-27-28-30-32-36-40-48-64				
11/32	20-28-32-40-48				
3/8	12-13-14-18-20-22-27-28-30-32-36-40-48				
13/32	16-20-24-32				
7/16	12-14-16-18-20-24-27-28-32-36-40				



HIGH SPEED LEFT HAND TAPS

SIZE	THREAD	SIZE	THREAD	SIZE	THREAD
0	96	3/8	16-24-32	1-3/8	6-8-10-12-16-18-20-24
1	56-64-72	7/16	14-20-28	1-7/16	8-10-12-14-16-18-20
2	56-64	1/2	12-13-20-28	1-1/2	6-8-10-12-16-18-20
3	56	9/16	12-18-20-24	1-9/16	8-10-12-16-18-20
4	40-44-48	5/8	11-12-18-20-24	1-5/8	8-10-12-14-16-18-20
5	40-44	11/16	11-16-24	1-11/16	8-10-12-14-16-18-20
6	32-36-40	3/4	10-16-18-20	1-3/4	8-10-12-14-16-18-20
8	32-36-40	13/16	16	1-13/16	8-10-12-14-16-18-20
10	24-30-32-40	7/8	9-12-14-18-20	1-7/8	8-10-12-14-16-18-20
12	24-28-32	1	8-12-14-16-18-20	1-15/16	8-10-12-14-16-18-20
1/4	20-28-32	1-1/8	7-12	2	4 1/2-10-12
5/16	18-20-24-28-32	1-1/4	7-12-16-18		

• SPECIAL AND LEFT HAND DIES IN STOCK •

NOTE: Oversize, Undersize, Metric, 64th and 32nd Size Taps Available for Quick Delivery. We stock Special Sizes in High Speed Milling Cutters, Slitting Saws, End Mills and Reamers.

DEALER INQUIRIES INVITED

If you are a user of cutting tools it will pay you to be on our mailing list. Write for circular now to Dept. B.

SID TOOL COMPANY, INC.

Cutting Tool Specialists
158 LAFAYETTE ST., NEW YORK 13, N. Y.
Telephone: BEekman 3-4270

Use postpaid card. Circle No. 545

Northern Illinois Machinists	359
Northwestern Tools, Inc.	290
Numberall Stamp & Tool Company	280

O

Octagon Process, Inc.	266
Ohaus Scale Corp.	370
Ohio Knife Company	318
Oliver Machinery Company	325
O'Neil-Irwin Manufacturing Co.	96-B-C
Opto-Metric Tools, Inc.	274
Oslund Precision Products	367

P

Pacific Gage Division	362
(Darco Industries)	
Pannier Corporation	393
Pedrick Tool & Machine Co.	74
Penniman, Elisha	399
Perkins Machine & Gear Company	219
Plunket Machine Company, J. E.	389
Pope Machinery Corporation	86
Portage Double-Quick, Inc.	20
Porter Company, H. K.	266
(Disston Div.)	
Pratt & Whitney Company	166-167-168-169
Preis Engraving Machine Company, H. P.	198
Putnam Tool Company	132

Q

Queen City Machine Tool Company	94
Queen Products, Inc.	43
(Almco Div.)	

R

R and L Tools	62
Raybestos-Manhattan, Inc.	207
(Manhattan Rubber Div.)	
Reading Machine Company	388
Reid Brothers Company, Inc.	158
Richards Company, J. A.	378
Rivett Lathe & Grinder, Inc.	239
Rocheleau Tool & Die Company	265
Roll Feeds Corporation	287
Rotex Punch Company	70
Rothfuss Tool Company	343
Rowe Machinery & Mfg. Co., Inc.	401
Royal Oak Tool & Machine Company	Back Cover
(Grinder Div.)	
Royal Products	329
Ryerson & Son, Inc., Jos. T.	106

S

S & S Machinery Company	42
Safety Socket Screw Company	288
Sanford Manufacturing Corporation	136, 310
Scharmann Machine Corporation	26-27
Scherr Company, Inc., Geo.	349
Schmarje Tool Company	409
Schmidt, Inc., Geo. T.	284
Schupak Supply Company	409
Scientific Lubricants Company	358
Scully-Jones & Company	187
Sealot Corporation	209
(Acrament Inst. Div.)	
Seibert & Sons, Inc.	85
Seneca Falls Machine Company	285
Sentry Company	404
Sheldon Machine Company	214
Sheppard, Stanley	63
(Adcock & Shipley, Ltd.)	
Sheppard, Stanley	257
(Alsmetall Company)	
Sheppard, Stanley	51
(Harrison & Sons, Ltd., T. H.)	

Sid Tool Company	413
Simonds Abrasive Co.	53
Simonds Saw & Steel Company	22
Skinner Chuck Company	139
Smith & Mills Shaper Division (Nebel Machine Tool Corp.)	11
Snow Manufacturing Company	33
Somma Tool Company	64
Spellman Company, R. I.	272
Sperry Products, Inc.	305
Spiral Step Tool Company	289
Standard Gage Company	144-145
Standard Steel Specialties Co.	371
Stone Machinery Company	269
Strong, Carlisle & Hammond Company	321
Sun Oil Company	14-15
Sunnen Products Company	160-A
Syntron Company	52

T

Taft-Peirce Manufacturing Company	188
Tamm Industries, Inc.	304
Tap-Cartridge Company	98
Thompson & Son Company, Henry G.	331
Thriftmaster Products Company	184
Tobin-Arp Manufacturing Company	71
Tomkins-Johnson Company	163
Tool Supply Company	346
Torrit Manufacturing Company	291
Terrington Manufacturing Co.	3
Transmores Corp.	358
Tree Tool & Die Works	10
Trio Machine & Manufacturing Co.	293
Twentieth Century Manufacturing Co.	210
Ty-Sa-Man Machine Company	78

U

U. S. World Trade Fair	278
------------------------------	-----

V

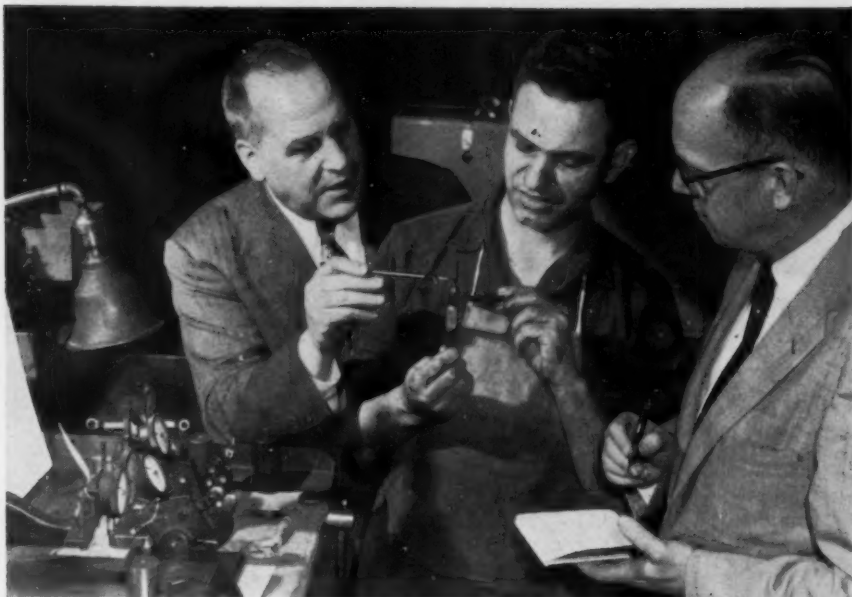
Vanadium-Alloys Steel Company	311
VanKeuren Company	28
Vascaloy-Ramet Corporation	403
Veet Industries	151
Victor Machinery Exchange, Inc.	286
Vogel Tool & Die Corporation	361
Vulcan Tool Company	21-95

W

Wade Tool Company	2
Wadell Equipment Company	50
Walton Company	182
Ward Thread Grinding Company	376
Wardwell Manufacturing Co.	204
Watts Brothers Tool Works	360
Webber Gage Company	213
Weldon-Roberts Rubber Company	60
(Brightboy Ind. Div.)	
Wells Manufacturing Corporation	196
West Point Manufacturing Company	319
Westwood Engineering Company	282
Wetmore Tool & Engineering Co.	274
Whistler & Sons, Inc., S. B.	93
Whitton Manufacturing Company	82
Wickman Manufacturing Company	89
Wiedeman Machine Company	249
Wilkins, Alwin Fr.	309
(Antares Instrument Inc.)	
Wilson Air Collet Closer Company	366
Wohnlap Products, Inc.	307
Woodruff & Stokes Company, Inc.	172
Woods Machine Company, Inc., S. A.	231
Woodson Tool Company	375

Y

Yoder Company	247
---------------------	-----



Mr. H. T. Hollowell, Jr. (left), President of the Standard Pressed Steel Company is explaining to Paul Meline (right), Managing Editor of Hitchcock's Machine and Tool Blue Book, how Pat Fiorelli, an SPS Transfer Cold Header Operator, thoroughly inspects parts produced on his machine. Notice the many inspection devices used to make his tests.

THE MAN FROM HITCHCOCK

Continuing Machine and Tool BLUE BOOK's informative reports on the latest thinking of top-level management in American industry and business, Managing Editor Paul Meline presents another exclusive interview in this April issue. Entitled "Production's Big Stake in Quality Control," this feature reflects the advanced thinking of Standard Pressed Steel Company's top executive about their quality-control program . . . one of the finest in the industry. This SPS program which puts production quality responsibility directly on the shoulders of each machine operator has actually lowered production costs and reduced reject rates to nearly zero. This inspiring interview with Mr.

Hollowell, who is also President of the American Standards Association and has been cited three times for management excellence, will be read and reread by the readers of Machine and Tool BLUE BOOK.

The editorial-readership atmosphere achieved through outstanding editorial features such as this, which appear month after month in Hitchcock Publications, provide the best assurance that your sales-story will talk to your prospects when they are in a most receptive mood. See your "Man from Hitchcock." He will show you how Hitchcock Publications can help you to reach, influence and sell your market.

METALWORKING



Machine & Tool Blue Book
Machine & Tool Directory
Grinding and Finishing
Carbide Engineering

WOODWORKING



Hitchcock's Wood Working
Digest
Hitchcock's Wood Working
Directory

TRANSPORTATION



Mass Transportation
Mass Transportation's
Directory
School Bus Trends

hitchcock
PUBLISHING COMPANY
WHEATON • ILLINOIS

THE PIONEER OF CONTROLLED CIRCULATION

collets, pushers, details

accuracy is our
Standard



Allen's Burn Style TAPER LOCK PUSHERS

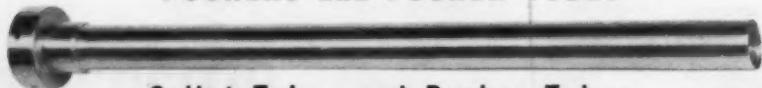
Automatic Adjustment
Positive Feed

Minimum Scratch
When Specified

**SPECIAL
DETAILS
TO PRINT**

Let Us Quote
Your Details

We Will Duplicate COLLETS, COLLET TUBES,
PUSHERS and PUSHER TUBES



Collet Tubes and Pusher Tubes

ALLEN COLLET MFG. CO., INC.

17720 CLARANN AVE. • MELVINDALE, MICHIGAN

THE THOUSANDS OF HOLES

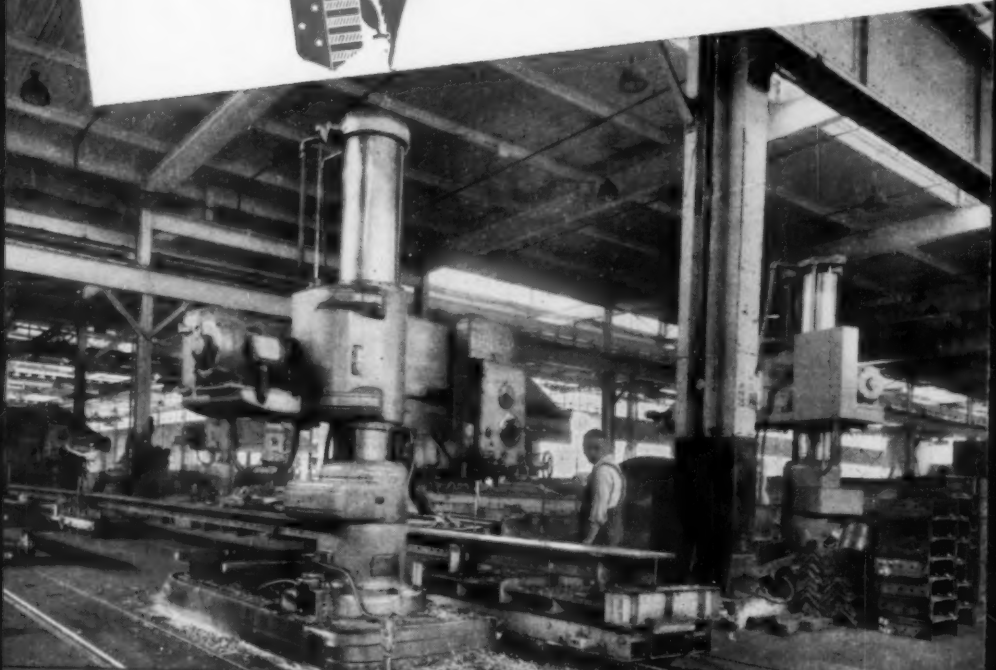
required in the construction of the recently completed Jefferson City, Missouri bridge by Stupp Bros. Bridge and Iron Company, of St. Louis, Missouri, were all drilled by "AMERICAN" Hole Wizard Radials.

One of the oldest and largest bridge builders and steel fabricators of the Middle West, Stupp Bros. use "AMERICAN" radials exclusively for their drilling operations. Their main reason for using "AMERICAN" exclusively is LOW COST PER HOLE.

Quick Handling—Fast Penetration—Low Maintenance are the prominent contributing factors.

"AMERICAN" Radials can be relied upon to pay excellent returns upon the user's investment.

Ask for Bulletin No. 328.

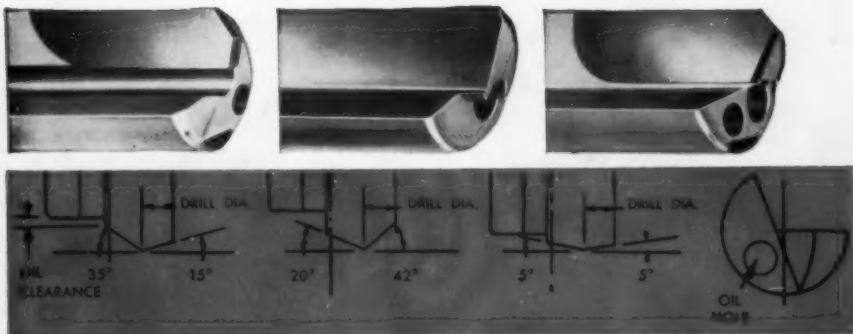


THE AMERICAN TOOL WORKS CO. Cincinnati 2, Ohio, U. S. A.

LATHES AND RADIAL DRILLS

R-O RELIEF ALSO...

***makes gun drills
last longer,
cut better and
perform more consistently!***



Not only does the R-O permit exacting control and duplication in grinding gun drills but it grinds cam relief from edge to heel leaving maximum metal to support the edge and no feather edge to break down. Write for literature and instructions on how to grind gun drills.

RO
UNIVERSAL
FORM RELIEVING
FIXTURE

R-O Grinder

GRINDER DIVISION
Royal Oak Tool and Machine Co.
29800 Stephenson Hwy.
Royal Oak, Mich.

Please forward the R-O catalog

Firm

Address

City..... Zone..... State

Per

Title

On display A.S.T.E. Show, Philadelphia, May 1 to 8.